## AMERICAN JOURNAL OF ORTHODONTICS

OFFICIAL PUBLICATION OF THE AMERICAN ASSOCIATION OF ORTHODONTISTS. ITS COMPONENT SOCIETIES, AND THE AMERICAN BOARD OF ORTHODONTICS

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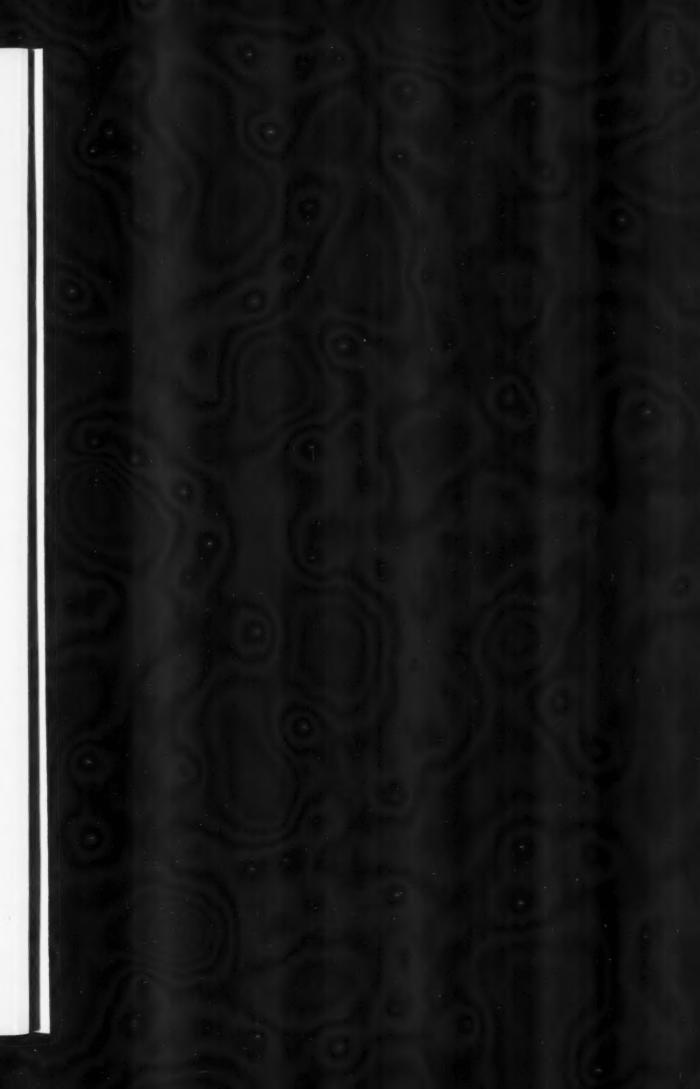
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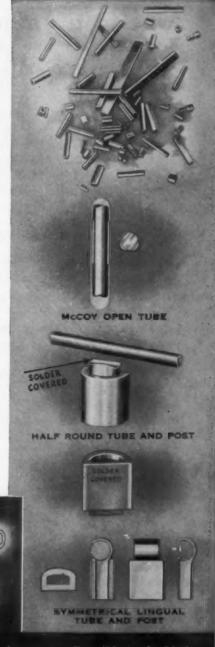
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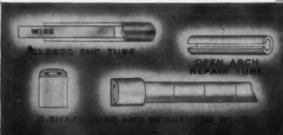
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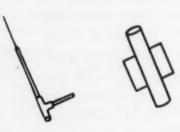
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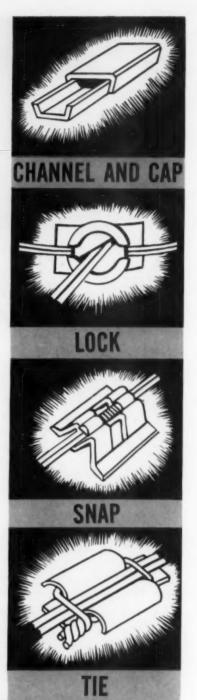
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# American Journal of ORTHODONTICS

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Vol. 39

MAY, 1953

No. 5

### Original Articles

PRESIDENT'S ADDRESS, PACIFIC COAST SOCIETY OF ORTHODONTISTS

REUBEN L. BLAKE, D.D.S., SAN FRANCISCO, CALIF.

AM happy indeed, as your presiding officer, to welcome you to San Francisco to our twenty-third Biennial General Meeting. This is the twentieth time that our Society has met in San Francisco, and we of the Central Component and of San Francisco in particular are extremely pleased that you select our city as the focal point for our meetings. You are always more than welcome.

I am sure that I need not tell you of the vast amount of time and effort expended and other personal sacrifice which goes into the preparation climaxing in this meeting starting this morning. For that reason, my first wish is to pay my personal tribute and express my sincere gratitude to all my colleagues who have served on committees during my administration, essayists and clinicians participating in this meeting and program and arrangements committeemen who are making this meeting possible. To those around me in the San Francisco area, especially Kester Diment, Charlie Konigsberg, Art Skaife, Wendell Wylie, Ray Curtner, Nick Carter, and Howard Jan, I greatly appreciate their capable and unselfish assistance. About Ernie Johnson, my General Chairman, I can only say that I hope that succeeding presidents are fortunate enough to secure general chairmen equally as efficient, devoted, and conscien-Secretary-Treasurer Fred West, with his experienced wisdom, sound judgment, and painstaking attention to detail, has been a bulwark of strength and reassurance to me as he has to those who preceded me. I may honestly say that I do not know what I could have done without him. Fred is now resigning from his office, after many years of loyal and efficient service, to move, as you know, to higher levels about which I shall mention more later. I may tell you, at this moment, that although Fred contemplated resigning previous to my administration, he graciously consented to carry on until the completion of my term of office. What greater personal favor could be conferred on any man?

Presented at the Twenty-third General Meeting of the Pacific Coast Society of Orthodontists, San Francisco, Calif., Feb. 25, 1953.

In assembling the clinical material for this meeting, much serious thought was given to presentations and discussions embodying each and every technique used by our members. This, I believe, is a wholesome and healthy procedure for it will give our members the opportunity, by visual example, to observe what splendid orthodontics may be practiced by all forms of mechanical therapy. By this, we may become more understanding and tolerant toward men and methods other than our own and thereby be better able to protect and defend our fellow practitioners from any prejudicial influence or public bewilderment. As we all strive for the same objectives, perhaps by different paths, there should exist a mutual respect in order to maintain the dignity of the profession itself.

This meeting, like those preceding it, will, I am sure, be further evidence of the phenomenal growth of our Society especially in the last few years. It is becoming apparent that our present hotel accommodations may some day become inadequate. This meeting and our last, two years ago, have seen the admittance of 86 new members. We now have a total of 241 members and none have been lost except by death.

While on this somber subject, I am cognizant of the absence of some of our old-time and valuable members who have passed on. This will be further mentioned by Bill Smith, Chairman of our Necrology Committee. I must, however, give serious and sad mention to the passing, within the past year, of two of our honorary members as well as eminent dental leaders of our nation in our generation, Dean Emeritus Guy Stillman Millberry, of the University of California, and Dean Ernest Gaynor Sloman, of the College of Physicians and Surgeons. These two men were not only beloved personal friends, friends of the specialty of orthodontics and our Society, but also widely recognized and renowned educators whose abilities and efforts materially steered the course of dental history toward the ideals of high ethical and scholastic standards existing today. They had both delivered eloquent addresses of welcome before our Society in the past, and their warm and friendly presence among us is sadly missed.

Last April, it was my pleasure and privilege to represent you as a delegate to the Annual Meeting of the American Association of Orthodontists in St. Louis. This visit I described in a special report to you issued shortly after my return. If I may repeat briefly, it was an exciting and illuminating experience for me to meet and rub shoulders with the nation's orthodontic leaders known to me heretofore only by reputation and the literature. At that meeting, you may recall, I had the opportunity, with the idea instigated by American Association President Bernard deVries, to exert my influence toward bringing the 1955 Association meeting to the Pacific Coast, and also the nomination of our own Fred West as President-Elect for that meeting. I need not tell you of the honor and prestige this will bring to our Society, for it will be one of the greatest events in our history. With men of your caliber whom our strong society possesses, with your spirit of willingness and cooperation, I am confident that we can produce a meeting with complete satisfaction to the American Association, and of which we may well be proud.

Since our last meeting, our Constitution and Bylaws have been completely revised to conform with those of the American Association. This monumental task has been accomplished by Don MacEwan and his committee of Arnold Stoller, George Barker, and Harvey Stryker as appointed by Past President Stenson Dillon. I hope you realize the tedious, exacting, and time-consuming job this is, and I congratulate Don and his committee; I know they have the appreciation of our entire membership.

There is one respect in which, perhaps, over the years, our Society has shown some negligence or at least some weakness which now has been partially corrected or improved. This is the very difficult situation which presents itself upon the sudden death of a member as to the disposition of his practice, aid and comfort to his widow or family, and other numerous details connected therewith. For a long time, this subject has been a matter of serious concern to Stenson Dillon, William Smith, and Malcolm Chipman from unfortunate and not too satisfactory circumstances which have arisen. I, therefore, appointed them as a Necrology Committee to undertake a study of this very important subject, a report of which you will hear from Chairman Bill Smith later. I have been in touch with their activities and in many consultations among themselves, together with the late Dean Ernest Sloman, attorney Anthony Kennedy, and insurance people; they have spent many hours of laborious effort in clarifying this complex and almost insoluble problem. I may tell you that their results have been recognized by our parent body, the American Association of Orthodontists, who now has the matter under further study, from which they may produce for all of us valuable advice and assistance.

In revising our bylaws to conform with those of the American Association, we found that our procedure for admitting new members needed correction. I, therefore, appointed a Membership Committee composed of Allen Scott, Chairman, George Barker, Allen Bishop, George Hahn, Harvey Spears, and Cecil Steiner, and requested them to meet and formulate a satisfactory plan of procedure. This they did in a full-day session in consultation with Don MacEwan, Chairman of the Constitution and Bylaws Committee, with a view toward amending our bylaws. Chairman Allen Scott's report was given at our business meeting.

A great number of needy children in California with malocclusion have been provided with orthodontic treatment through the Crippled Children Services. This will be further reported by Fred McIntosh, Chairman of our Legislative Committee. I should mention in passing that I am fully aware that our members are doing their full share in treating these patients at fees representing a reduction from their usual private patient fees. For this I believe you deserve congratulations and the appreciation of those patients as well as the taxpayers.

It has been very gratifying and with a great sense of pride to observe the great number of our members who have qualified and have been awarded certification by the American Board of Orthodontics. I have personally seen some of the submitted work in possession of a member of the Board, our own Ernie

Johnson, and have been amazed and impressed by its exceptionally splendid quality. It exemplifies the high standard of orthodontic education received by our young men today. I am told that, of the twenty-five cases of submitted work to be displayed at the coming American Association meeting in Dallas, thirteen are from members of our Pacific Coast Society. I am sure this makes us all feel very proud.

May I venture a passing thought regarding orthodontic education? I cannot refrain from reminiscing a bit to the days when most instruction was received, and very effectively so, through the media of proprietary schools, seminars, short courses, or preceptorships. These, except in few instances, have about faded from the picture in favor of formal, extensive curricula under the auspices of dental schools. This is undoubtedly as it should be, in keeping with other progress and advancement in life itself with its greater scientific development, research, and higher learning in all fields of endeavor. But, to the younger men, may I remind you that such advanced instruction was not available a generation ago. And remember, too, that most of the nation's outstanding, eminent, and successful orthodontic leaders were not products of the advanced teaching available to you today. But they have kept abreast of evolutionary developments and many are the selfsame individuals who have taught you what you know today. The time may come when, you, too, may reminisce and find that the standard of learning which you now have enjoyed may be antiquated and obsolete.

But what have our so-called pioneers achieved? They have indoctrinated and conditioned our people into an aroused and orthodontic-conscious public and "laid it in your laps," so to speak. This could not have come about by accident. It must have been the result of successful and worth-while public service to earn for our profession its present position in the public mind as one of dignity and respect.

They have passed on to you a history rich in accomplishment and a gift of abundance in public esteem and confidence, a heritage which I hope may be profoundly cherished.

I must tell you this. Quite some time ago, Secretary of the American College of Dentists, Otto Brandhorst, suggested that a history of our Pacific Coast Society would be a splendid thing to have and should be written. No member of our Society is better qualified to undertake such a project than our Past Editor of the *Bulletin* and pioneer member, Carl Engstrom. Carl has graciously consented to do so, is now in the process, and certainly deserves the thanks and appreciation of the entire membership of this Society. I know that with his knowledge, experience and meticulous attention to detail, it will be a masterpiece.

Your Pacific Coast Society *Bulletin* carries on in its unique, simple style. It fulfills its function, I believe, as an adequate news organ for our Society. It maintains the vital and necessary contact between our far-flung members, keeping them informed of the activities of their confreres many miles apart. Its circulation carries it to dental libraries and exchanges with other publica-

tions throughout the world, and frequent requests are received for copies to complete library collections. I may say that its format represents the most economical type of production in the publishing field.

Unlike many other dental organizations, the fiscal policy of your Society has never been to aspire to the accumulation of a wealthy treasury or estate. Under the wise and thrifty management of our past secretary-treasurers and our present Fred West, the financial status of our treasury is well in the black and in a sound and robust condition as you will observe when the treasurer's report is read.

Occasionally, presidents will, in their addresses, make certain recommendations or suggestions to be acted upon by the incoming administration. I have given you, to the best of my ability, a recapitulation of the various departments and functions of our Society, which, to me, sound like a healthy, wholesome, and smooth-running going concern. Nor have I, during my administration, received, or detected, evidence of dissatisfaction, displeasure, or unrest among our brethren. Perhaps they have been charitable toward me, for which I am grateful. I therefore have no sweeping revolutionary recommendations or constitutional changes to propose, which I hope meets with your approval.

To the incoming officers including President-Elect Arnold Stoller, my warmest felicitations and best wishes for a successful administration with the loyal cooperation which I am confident you will have as I have had in the past.

And now, fellow members, I would like you to know how sincerely I appreciate the privilege which you have bestowed upon me of serving as your president. I approached the office with a profound humility yet a sense of understandable pride, and I assure you it has been an honor that I shall forever cherish.

### A PRACTICAL APPROACH TO THE PROBLEMS OF ORTHODONTICS\*

### CHARLES M. WALDOT

THE primary purpose of any one of the health services is to help the largest number of people to make happy, successful adjustments to their environments. If the importance of this role was ever in doubt, it should be perfectly clear now. There is widespread agreement that the world faces a protracted struggle which will ultimately be decided by resources, the most important of which are human resources. Confidence, a freedom from mental and physical handicaps which will allow people to maintain balance, to work and think effectively, are the nation's greatest assets. As a profession, it is our job to do what we can to increase them. If we are to succeed, we need to be practical about it.

By a practical approach to our problems, I emphatically do not mean what is meant when someone says, "That theoretical stuff is all right but let's have something practical." If that someone is an orthodontist, nine times out of ten he means by "practical" something to do with appliances. The effective use of good appliances is as essential to orthodontics as breathing is to living. It is a means to an end, however, not an end in itself, and our real problems do not lie in that area. The real problems that face us are those of growing up professionally; of accepting our professional maturity and its responsibilities. If we are to do this, we need to be less preoccupied with gadgets and more concerned with concepts and ideas. We should quit chasing that "will-o'-the-wisp," a system of treatment that will give us the answers ready-made, and accept the inescapable fact that thought and reasoning are essential to good orthodontics.

We must, above all, accept our responsibilities as a profession if we want to remain one. For a long time, orthodontics has been regarded as a young and growing profession, both by ourselves and by the public. Society will not tolerate childishness after childhood has passed. Our acceptance of maturity will determine whether orthodontics is to be a profession or a trade; a public benefactor or a public ward.

As a first step in a practical approach to our problems, we must break away from a narrowness of thought that inevitably afflicts members of a specialty within a specialty. We must readjust our sense of values, if necessary, and take a fairly comprehensive look at orthodontics and orthodontists; try to see what it is we want to be and what we want orthodontics to be; what we want to do and how we can do it best under the limitations of our knowledge and abilities and the conditions imposed by nature and circumstance.

<sup>\*</sup>Work upon which this paper is based was supported in part by grants from the Eugene Higgins Trust Fund.

<sup>†</sup>Deceased since the article was read before the Middle Atlantic Society of Orthodontists, Atlantic City, N. J., Oct. 20, 1952.

If we are to be practical, we cannot divide our problems into separate and isolated categories. As a rule, we divide them into two groups for the sake of convenience: (1) problems of orthodontics as a profession and those of the orthodontist as a professional man; and (2) problems of the individual orthodontist in the treatment of his patients. This separation, though it is often a real one in our thinking, is a purely arbitrary one and the two groups are in fact inseparable and interdependent. It is obvious that a profession cannot go in one direction if its members are working in another. It should be equally obvious that a really successful practice must rest upon a foundation of principles and basic decisions derived from considerations which are, at first glance, pretty remote from our everyday problems; that a multitude of questions which arise in daily practice can be answered readily and satisfactorily only if the orthodontist has already arrived at basic decisions consistent with himself, with his profession, and with conditions under which he works. He needs these not only to give him a point of view and a frame of reference within which to seek his answers, but also to insure that he does in detail what he wants to do in general. Such a set of basic decisions must be reasoned from facts or from the best available judgment. They must be carefully thought out, constantly revised, understood, and believed in. They must be eminently practical. Something memorized from a textbook will not do.

Orthodontics, a specialty of dentistry, has been accepted as a profession, indeed-in many quarters, as one of the "learned professions." As in the case of any new and growing endeavor this acceptance has been given on faith but it will not continue to be given indefinitely unless it is deserved. In the long run, orthodontics will be exactly what we make it. If it is devoid of a vital awareness of its responsibilities to society and an active concern with the problems of meeting its obligations, it then, rightly, becomes a trade. The first important and basic decision we must make, however, is whether we want orthodontics to be a profession or a trade. If we are content to let it become a trade, much of what I have to say is of no concern. If we want to maintain orthodontics as a profession and increase its stature, we must face a number of problems and arrive at sound basic decisions. These problems include: (1) the relationship of orthodontics to world and national affairs; (2) the responsibilities of orthodontics to society; (3) the responsibilities of the orthodontist as a professional man to his profession; (4) the responsibilities of the orthodontist in the recruitment and education of new members of his group.

Any profession demands so much unselfish contribution that it is doubtful whether anyone can truly be a professional man unless he is inspired by a realization of his role in the affairs of the world. Without this he is just a little man working his established hours in a little room for a few years. The place of the orthodontist in world and national affairs becomes obvious when one considers the importance of human resources and the contributions the orthodontist can make in terms of the health, happiness, and confidence of human beings. It should be obvious, also, that to the extent that the orthodontist fulfills this role, he is also meeting his responsibility to society as a professional man. We have made considerable progress and yet many of the

conventions, traditions, and so-called "ideals" which we still cherish are carryovers from that early period. As a practical step in meeting our problems, these need to be looked over. re-evaluated, and perhaps supplanted.

I propose to go immediately to the heart of the matter by discussing the needs for orthodontic treatment. This is the crux of all the problems I have mentioned heretofore. As I implied earlier, I believe that we as a profession have dodged the issue on the grounds that we were a young and growing profession. I am convinced that we can no longer do this; that the future of orthodontics will depend upon an earnest, sincere, and successful effort on our part to meet the needs for our services. Without recourse to lengthy arguments or statistics I believe it will be accepted that we now only begin to meet the demand for our services in a few thickly populated areas. The practicing orthodontist is familiar with the demand for treatment because it is demand that brings patients to his office. Although there is some overlapping, demand and need are by no means synonymous. The practicing orthodontist may have very little knowledge of the extent of orthodontic needs. Only the briefest experience examining patients in an orthodontic clinic will convince one, however, that there is a vast need for orthodontic service quite in addition to those patients who eventually find their way into the orthodontist's office. I think all orthodontists have recognized this need and most of them have been generous in taking care of a certain number of needy cases with little or no charge. The motives and intents of this are commendable but the total effect on the problem is insignificant.

There is good evidence that times and conditions are changing in such a way that we will soon be judged—if we are not already—by our success in meeting needs rather than in meeting demands. In this regard I should like to read a paragraph from an article by Dr. Alan Gregg¹ of the Rockefeller Foundation, certainly one of the greatest students of human welfare in the general field of medicine. Speaking of medical care he says, "An increasing number of people want the better care that is now available. Whereas medical care used to be considered a privilege of the rich or a boon given in the name of charity to the poor, it is now coming to be thought of as a necessity that more and more people insist on having, if necessary by taxation. And at that point a revolutionary change occurs in the horizon of medicine: instead of calculating increases in the demand for medical care, we face the task of estimating the need for medical care." This obviously applies to orthodontics as much as it does to other branches of the general field of medicine.

The question now arises in a very practical way, "What chance have we with our present resources to meet the need for orthodontic treatment?" If we decide that it is to be done and that we are to accept it as a professional responsibility, whose job is it?

A brief survey of the possibilities seems to show quite clearly that the job of meeting the public need for orthodontic treatment must fall squarely upon the shoulders of the individual practitioner. No one has presented or even suggested a practical way to provide orthodontic treatment on a large scale through Public Health clinics and, even if such clinics could be built,

they could not be staffed. Considering the size and number of existing orthodontic clinics, most of them in schools, the numbers of patients treated are infinitesimally small. Furthermore, because of its very nature, orthodontics is politically unattractive—the expenditure of large sums of money will please only a small number of voters with the risk of alienating large numbers who might feel that they were discriminated against. Thus the danger, or hope, of meeting the problem by some form of socialized medicine appears virtually nonexistent. Money from any source, whether it be from government funds or from private funds, might help, but it does not offer a solution.

Although we can expect a steady increase in the number of well-trained orthodontists, we cannot hope for anything sufficiently spectacular to have a material effect on the problem under discussion. Orthodontists must first be trained as dentists and the capacities of dental schools are definitely limited. Even if they could be significantly increased we must face the fact that dentistry (together with medicine, engineering, physics, industry, and the armed services, to mention a few) is now engaged in a fierce competition for the good students that we need. The shortage of teachers and facilities for orthodontic training at the graduate level would also be a formidable stumbling block. Altogether, an increase in orthodontic personnel does not seem to provide a practical solution.

It is a curious paradox that orthodontists, pioneers in dentistry in their interest in human biology and their inclusion of its elements in an attack on their problems, have perhaps the least to expect from it in the way of revolutionary findings which might pave the way for prevention. There is good reason to believe that the knowledge upon which we can hope to base preventive measures is already in our hands. There is much we can do through a better use of our knowledge of environmental factors and their effect upon the dentures, particularly if we have the help and cooperation of our colleagues in dentistry. Basic studies, such as that of Stockard and Johnson on dogs,2,3 clinical studies such as those of Moore and Hughes4 and of Brodie,5 and expert judgment such as that of Brash,6 all point to the probable fact that much malocclusion is of genetic origin. It is possible that future discoveries may give us better means of circumventing the work of undesirable genes and their agents but at the present time that does not appear to be a reasonable hope. Orthodontics thus differs from restorative dentistry, for instance, where discoveries leading to the prevention of dental caries are at least a possibility.

Thus the problem of meeting the public needs for orthodontic service is clearly up to the individual orthodontist. If we wish to retain the respect and confidence of the public, I believe we must do something about it, and do it now. We must at least make an honest effort which will show significant results. There are two practical ways in which we can do this: (1) through the conduct of our practices—by increasing the number of patients treated, and by making treatment economically available to more people; (2) through friendly cooperation with our colleagues in general dentistry and in the practice of dentistry for children.

It may seem highly presumptuous to suggest to a group of orthodontists that they attempt to treat more patients when they are, in all likelihood, already too busy; or that they should attempt to lower the cost of orthodontic treatment to the individual when they themselves are faced with economic difficulties due to living costs and taxation. I am convinced, nevertheless, that wherever traditional methods and viewpoints now prevail both of these courses are entirely feasible and that much can be accomplished without economic loss and with very substantial gains in satisfaction to the orthodontist. I propose to outline means which I consider eminently practical toward this end in discussing the problems of the orthodontist in the treatment of his patients, offering what seem to me practical solutions consistent with the aims and responsibilities of the profession and of the orthodontist as a professional man.

If we are mistaken in our destination, the best means of transportation will only serve to carry us farther afield.

Underlying all that an orthodontist does in his practice must be some sort of general decision as to objectives. What is it that he wants to do? What is he trying to accomplish? Is it ideal occlusion wherever possible; a stereotyped facial pattern which he has in mind; or is it simply to muddle through to an unforeseen end which will not be too unsatisfactory? Does he wish to treat occlusal problems, occlusal and facial problems, or does he in a much broader sense wish to treat patients? To practice effectively he must have some sort of an answer to these questions. Otherwise the innumerable subsidiary problems that arise cannot be answered logically—a situation which makes for confusion and chaos.

My own thinking on this subject has been strongly affected by my experience as a member of the Child Research Council, a group conducting a longitudinal study of growing children. One of the primary objectives of this group is to study the same children over a period of many years, carefully watching and measuring many characteristics and attributes to see whether or not they can be considered consistent with health. Stated in another way, the study seeks to determine the range of permissible variation in such characteristics. This project, involving as it does a long period of time, great expense, and painstaking study, required at the start a sound concept of what constitutes health. This is not as easy a problem as it may appear at first glance. When we think of it, we realize that we commonly consider health as an absence of disease and, conversely, disease as a departure from a state of health. This is not very helpful. In arriving at a workable definition of health at the Child Research Council, it was recognized that an individual is always the product of his genes and the environment in which he lives. Underlying all of his efforts and accomplishments in life is the necessity for making a successful adjustment to his own particular environment. Health may be taken to be synonymous with such an adjustment to environment, and any conditions or attributes which physically or mentally handicap (or seriously threaten to handicap) the individual in making it may be considered as inconsistent with health. Over the course of the years, in actual use, this has proved to be a sound and workable definition. Certain general findings have been so emphatically evident in this study (as they have been in other similar studies) that they are worthy of mention. Those of greatest importance to us at the moment are (1) that individuals differ in almost every attribute and characteristic studied; (2) that the range of variation is often much wider than the textbooks have indicated, and what is even more important that wide variations may be entirely consistent with health; (3) that consideration of the whole individual organism is often essential in determining either health or departure from it, and in evaluating the significance of the various attributes studied.

All of the children in this group have been studied exhaustively. Not only the children themselves, but the parents, the homes, the schools, the churches—in short, every observable aspect of their lives has been studied carefully and recorded. All of the children in the group were healthy children. Whenever evidence indicated otherwise, the child was removed from the group. Yet a considerable number of these healthy children had dentures which, even under a rather liberal use of current orthodontic standards, had to be classified as malocclusions. They could have been presented at any society meeting as cases for treatment without meeting objection. Yet there was no evidence that they handicapped their owners in any way. Cases like this bring us face to face with the question, "Under such circumstances is treatment justified?" I think any honest answer requires us to throw the textbook out of the window and say "No." And yet, on occasion I amused myself by showing records of these cases to visiting orthodontists and although they brought forth a wealth of interesting discussion as to how they should be treated, the question of whether they should or should not have been treated never came up.

This is not offered as a criticism of orthodontists, but rather to point up one of the great problems which has beset orthodontics throughout its history, the problem of a concept of normal. This is a highly practical problem because the orthodontist must in some way use his own concept of normal every time he has to decide whether to treat, when to treat, how to treat, how much to treat, and how long to treat. The literature bears ample testimony to the struggles and searchings for a better concept. We are all familiar with the advantages and shortcomings of the ideal normal,7 the average normal,8 and the individual normal,9 to mention a few. They are all eminently useful in their places, but they all fail miserably as working concepts. All of them have one attribute in common. They are all attempts at a positive definition of what is right. A recognition of this fact both explains their failure when we attempt to apply them to an individual, and offers us an alternative solution. The fundamental biologic fact of variation in living organisms and our growing awareness of the extent of permissible variation within the limits of health makes it now quite unreasonable to expect that we can write a positive definition of normal. The logical alternative is to do in orthodontics as we do in so many other of our activities when we are faced with this same fundamental problem, i.e., to adopt a negative one. This amounts to the acceptance of any condition as normal unless it can be demonstrated not to be so. Working from

this point of view our approach automatically becomes a practical one. We study the patient to determine whether his occlusion handicaps him or seriously threatens to handicap him in making a happy, successful adjustment to his environment. If it does, he needs treatment. If it does not, he is "normal" and he does not need treatment. This is truly a working concept. Contrary to the others, it works best when applied to the individual. It can be shown in addition that it points up in an embarrassingly efficient way the gaps in our knowledge and the need for research. It forms a practical working basis for an approach to the whole problem of treatment which was admirably summed up by the late Dr. Lawrence Henderson. 10 Dr. Henderson, in defining what he took to be the objectives of medicine and dentistry, said something like this: "I believe that the aims of the physician or the dentist in general are to put his patient in a situation which is good enough for his purposes, so that he won't have to worry about it, and so he can safely forget about it." This seemingly simple statement has the unique advantage of sounding just as good if you yourself are the patient as it does if you are the doctor. It embodies the true essence of public service and points the way to the real future of orthodontics. It includes among other things an important principle, very often lost sight of, which is that the physician or dentist is successful in so far as he makes himself unnecessary. If it is to be put into action it demands careful, mature thought. "Good enough for his purposes" is not as simple as it sounds. It demands that we know a great deal more than we usually do about our patient, what he is, and what his purposes are. This is getting down in a practical way to that phrase we all accept and use so often in our writings and conversations, if not otherwise, "The importance of treating the whole patient."

Let us consider how this point of view can be put to everyday work. First of all, what are the ways in which malocclusion may handicap the patient? I have found it convenient to outline these in the following manner:

- 1. Handicaps to physical well-being: Under this heading are: (a) conditions which seriously interfere with function, i.e., the mastication of food, or speech; (b) conditions which endanger or threaten to endanger the health of the teeth themselves, their supporting structures, or adjacent soft tissues; (c) conditions in which the mechanical relations of opposing teeth tend to restrict or pervert facial growth.
- 2. Handicaps to mental well-being: Under this heading are: (a) conditions which seriously detract from the patient's appearance; (b) conditions which may, or may not, detract from the patient's appearance but which are a real source of worry to the patient; (c) conditions which cause pain.

Obviously, if we are careless in our use of these and place the broadest interpretation on each category, we can justify the treatment of anything that comes into our office and we are right back where we started. If, however, our decisions are based upon demonstrable evidence, hard facts, and reasoned judgment, they can be extremely useful. The difficulties encountered in their use disclose our ignorance in a most glaring and healthful fashion. Innumerable

orthodontists, on innumerable occasions, have said, "Johnnie has a malocelusion; therefore he cannot chew his food efficiently and therefore he is malnourished." Is this true? I do not know and neither do you. There is little or no evidence available on the subject. We do not know how efficient human occlusion needs to be. There are very pertinent observations, however, that anyone can make, which indicate that occlusion does not need to be very efficient. The food we eat for the most part requires little or no chewing. Many apparently well-nourished individuals have extreme malocclusions. Many individuals (children especially) with excellent occlusions hardly use them in the process of eating. A great deal of the emphasis on efficient occlusion in dentistry relates to the problems of the prosthodontist and the necessity for keeping artificial dentures in place. Let us not make the mistake of carrying this concept unthinkingly into our own field. We badly need information on the need for occlusal efficiency but a brief exploration will show that it is not to be acquired easily. Any worth-while study must include not only a study of malocclusion but of mastication, digestion, and assimilation. This inevitably means long, very expensive, and arduous studies. About the best we can do at the moment is to accept as a practical answer that for the other wise healthy child only extreme malocclusions can be considered as handicaps to the function of chewing. For the child who is obviously malnourished or who is poorly endowed by nature in this aspect of his physiology, we may have to shade our judgments.

Evidence is also lacking as to whether malocclusion does or does not interfere seriously with the function of speech. It seems probable, however, that the coordination of the patient and his ability to adapt are far more important factors than the disposition of his teeth. Certainly it is an observation that we can all make that most of our patients with severe malocclusions have no speech defects and those who have speech defects may often have no malocclusion.

The same questions and lack of information also arise in connection with handicaps to the health of the teeth themselves and of their supporting structures. It is questionable whether malocclusion leads to an increased susceptibility to dental caries. Clinical evidence again supports both sides of this argument and gives us no answer. It is not likely that we shall have one until the nature of caries and its causes are better known. The significance of malocelusion to the health of the supporting structures is in about the same situation. In many quarters it is assumed that poor mechanical relationships of the teeth, so-called traumatogenic occlusion, inevitably causes breakdown of the supporting structures, and yet there is no real evidence for this. Many older individuals can be found with teeth in very adverse mechanical situations but with supporting structures in excellent condition. Conversely one often sees mouths in which both the occlusion and the state of the teeth themselves are excellent, yet breakdown of the supporting structures is widespread. Clinical evidence points strongly to the probability that local mechanical factors are of importance only when they are combined with certain combinations of underlying metabolic factors. In this connection I should like to illustrate for you what appears to be a basic concept, by means of a simple diagram that has to be drawn literally in mid-air as it is unsupported by concrete evidence.

For purposes of illustration I should like to consider the matter of root resorption. I happened to be closely associated with Dr. Albert Ketcham in the period shortly after the presentation of his study on root resorption<sup>11</sup> and I had a chance to see not only his material but also the voluminous correspondence which followed. He had shown, as you will remember, cases in which root resorption occurred during the course of orthodontic treatment. Later he received many communications, including x-ray films of mouths in which widespread root resorption was present although there had been no orthodontic treatment, or, indeed, mechanical interference of any sort. Subsequent work by Becks<sup>12</sup> showed the importance of metabolic factors in this condition. If we consider, together with this, the extreme and long-continued stresses that are often applied through orthodontic appliances or partial dentures without any evidence of root resorption, the following general conclusion seems justified:

There are three kinds of people with regard to root resorption: (1) those who never have root resorption in spite of what is done; (2) those who always have root resorption in spite of what is done; (3) those who may or may not have root resorption depending upon what is done. This could be graphed simply by a straight line with "never" at one end, "always" at the other, leaving a middle section with a question mark (Fig. 1). Simple as it is I am inclined to believe that this represents a very important basic concept because it is one which appears to apply not only to root resorption but also wherever we deal with mechanical factors superimposed upon organic structures with an underlying metabolic background. It seems quite likely that it is the nature of the metabolic background which determines just where an individual lies along this line. It is here that we badly need good research to give us some answers. We would be tremendously helped if we could examine an individual patient and say with certainty, before treatment, where he belongs along this line. In deciding whether or not to treat malocclusion which seemed to threaten the health of the supporting tissues we could make effective, practical use of such information.

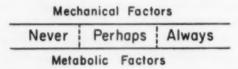


Fig. 1.—Whenever mechanical factors act upon organic structures the underlying metabolic factors determine whether or not the result is an adverse one (tooth root resorption, breakdown of supporting bone, connective tissue, epithelium, etc.). Clinical experience, judging from the results of applied stresses, indicates that some individuals never show these adverse changes, some always do, while still others may or may not, depending upon the nature of the stresses. Thus the size and nature of superimposed mechanical factors (such as those of malocclusion) are important for individuals in the middle (perhaps) group. Changes in mechanical factors (as by treatment of malocclusion) cannot be expected to better the situations of individuals in the never and always groups. We need diagnostic means to determine in which group an individual patient falls.

If the patient belonged in the "never" section, we might safely say that his malocclusion was of no significance and that he needed no treatment. We could say this equally well if he belonged in the "always" group simply because there improvement of his occlusion would have little hope of bettering his situation. If he belonged in the middle section, however, we should have a chance of keep-

ing him on the right side of the fence by bettering his occlusion. We could then direct our efforts, first of all, toward the middle group, where we could hope to do the most good.

Research, if successful, might take us an important step farther than this. It is almost too much to hope for, but it would increase the effectiveness of our treatment and eliminate the necessity for some of it if we could know how to alter the patient's metabolic situation to put him out of an adverse or doubtful category and into a good one. At the moment we must do the best we can with the scanty evidence at hand, and the most practical point of view seems to be a conservative one. In view of the need for orthodontic treatment and the inadequacies of our ability to provide it, I believe that we are not justified in undertaking treatment on these grounds just because it might be a good thing to do.

Time does not permit an adequate or comprehensive discussion of all that comes under the heading of psychological handicaps. Here again the great need is for sound, objective observation and reasoning. Certainly the mere presence of malocclusion does not by any means indicate that it is a psychological handicap. Many patients with extreme malocclusions are so confident and well adjusted that their malocclusions are of no significance whatever from this standpoint. At the other extreme, timid, insecure individuals may be quite seriously handicapped by minor malocclusions that would be of no concern to most people. A wise decision can be made only on the basis of a careful study of the individual and, where decisions are difficult, we shall have to find out as much as we can about the patient; what sort of person he is, his trends and tendencies, what his parents and brothers and sisters are like, his particular requirements, what sort of environment he lives in, and is likely to live in; what his biological assets and liabilities are.

In dealing with any of these handicaps to health, it should not be expected that decisions can always be made in one or two visits. In many cases repeated observations over a period of months or even years may be necessary to come to a wise decision as to what treatment is best for the patient. If you do not know what to do, the best thing you can do is nothing.

Having outlined a basic point of view in the approach to the problem of treating the patient, I should like to expand this somewhat and indicate a number of specific ways in which the orthodontist can make real progress toward meeting the needs of the public if he wishes to do so. They are as follows:

1. Distinguish sharply and realistically between health service and cosmetic service; between what is needed and what is merely desirable. Among patients treated in any orthodontic practice, there are many who are treated for purely cosmetic reasons, some who are treated solely on the basis of health, and a great many who present inseparable mixtures of both. Our traditional criteria for determining the importance of malocclusion to health are so vague and so extremely varying that almost anything can be included under the heading of health service. Contrary to these I have presented what I believe to be a practical basis for making this distinction, provided conscience as well as mind is employed in using it. At present the point I wish to raise is, supposing we are

able to make such a distinction, what should we do about it? There is nothing wrong with cosmetic service, per se, but I believe that we should not kid ourselves about it. What we do we should do knowingly. In a situation where we fall short of meeting the need for treatment there is a real question of the moral justification for purely cosmetic treatment. Any orthodontist could greatly extend his service to those who need it by simply refusing to take cases in this category. It would be naïve not to expect an immediate protest to this suggestion on the grounds that this would deprive the orthodontist of a lot of patients and that a great many of the people who need treatment either do not want it or cannot afford it. It may at one time have been true that many of the people who needed orthodontic treatment did not want it but I do not believe it is true today. The practicing orthodontist never sees a great many of the people in this category because they conclude beforehand that they cannot afford treatment and they do not come to his office. School orthodontic clinics are besieged by them; they are very patient, very willing and anxious to go to any lengths to obtain treatment. They are not necessarily poor people. They are not looking for charity. The economic status of many of these families puts orthodontic treatment just barely out of their reach by present standards. A glance at the crudest figures on family incomes will show a tremendous backlog of orthodontic patients. Every sound, progressive step we can take to lower the cost of orthodontic treatment automatically provides new hope for thousands of families and new patients for the orthodontist. They can more than replace patients lost by a refusal to take patients for cosmetic treatment only.

2. Distinguish between real need and artificially induced need and seck to eliminate the latter rather than treat it. Closely allied to the patient who seeks orthodontic treatment for purely cosmetic reasons, there are many patients whose needs, while real ones to them, are based upon purely artificial elements. In the past, orthodontics, in attempting to teach the public the value of its services, has oversold itself far beyond its means to make good. The early widespread acceptance of ideal occlusion as the normal and the mistaken notion that each individual is born with the potentialities for harmonious dental and facial development are at least in part to blame for this, the first because it seemed to indicate a need for treatment where often none existed and the second because it seemed to offer hope for successful treatment where often none was possible. Indeed, in the past, a good part of what has been labeled "education of the patient" has been directed toward giving him a fervent desire for an ideal occlusion which at times has resulted in actual fear of falling short of this state. I have had the experience of seeing a grown man, an ex-orthodontic patient, in a state of great perturbation because he had happened to notice that a lower central incisor was slightly rotated. This is admittedly an exaggerated case but there are many where the need is not an actual one but is nontheless real to the patient. The general effect of our literature, movies, and television is to say in effect, "You have no chance to be happy unless you look exactly like this," a situation which is greatly aggravated by the scare techniques of the advertising agencies. It is probable that not long ago most people lived quite happily with their malocelusions because nobody paid much attention to them

and, even if they did, it was not realized that much could be done about it. Now this is almost literally impossible. These are factors so important in our present-day life that they call for careful and serious thought on the part of the orthodontist. He should at the least avoid narrow, unrealistic thinking that places an overexaggerated importance upon his own field. Once, while visiting a friend, I heard him, in all sincerity, tell the mother of a 15-year-old boy that it was more important for the boy to have orthodontic treatment than to go to college. The boy had a mild Class II malocclusion with no impairment of function and only a slight impairment of appearance. Today's orthodontist should avoid the mistake of confusing what he himself likes with what the patient should have. He should apply a rational curb to his pet enthusiasms. If he begins to see bimaxillary protrusions in a majority of faces, he should take time out for a realignment of his perspective. In short, he should be very careful not to make a bad situation worse.

Actually, the orthodontist can do much to counteract the pressures of our present-day environment. Many malocelusions, although they are malocelusions by definition, are not disfiguring to their owners. In these cases the patient who presents for treatment is more often suffering from a disturbed sense of values, brought on by the manifold pressures just described. If the patient could be sent to a psychiatrist, and if psychiatrists were readily available who were interested and qualified in dealing with this type of minor problem, this would be the best way in which to handle such cases. As it is, the orthodontist can often pinch-hit for the psychiatrist and convince the patient that he has nothing to worry about. I have sometimes found it useful to refer patients to a passage in Tolstoy's War and Peace.13 Tolstoy is generally admitted to have been not only one of the world's greatest writers but one of the world's greatest students of human nature. In War and Peace he describes the beautiful young Princess Bolkónskaya, adding, "As is always the case with a thoroughly attractive woman, her defect—the shortness of her upper lip and her half-open mouth—seemed to be her own special and peculiar form of beauty." A valuable service can be rendered by the orthodontist by helping people to live happily with their malocclusions where there is either no indication for treatment or no hope that treatment can improve the situation. An even more noble and valuable service consists in the protection of the parent. As I have mentioned before, the conscientious parent is about the most vulnerable person on earth. He is pretty much at the mercy of anyone he goes to for orthodontic advice. He is on unsafe ground and open to future recriminations from the child if he takes it upon himself to decide that orthodontic treatment is not needed. Where treatment is not indicated or not advisable, the orthodontist can stand as guardian to the parent in present and future situations which may arise. This is one of the most important and valuable services the orthodontist can render. Thus, by working to counteract a multitude of adverse pressures, both from within and from without the profession, both from the past and the present, the orthodontist can do much to eliminate or at least mitigate a need for orthodontic treatment that is not based on reality.

- 3. Respect the limitations imposed by nature and circumstance. One of the greatest opportunities for the orthodontist to extend his services is by the careful limitation of the treatment which he renders both in amount and in duration. If he is to do this, he must first of all make a fairly accurate estimate of the patient's biologic assets and liabilities. He must also make an accurate estimate of the patient's needs for occlusal efficiency or optimum appearance. This involves such matters as the patient's potentialities, his environmental circumstances, way of life, etc. It involves arriving at final decisions to treat, following a series of determinations somewhat as follows: (a) Does this patient need treatment? (b) If so, what changes are desirable? (c) Which of these can be accomplished with reasonable assurance of success (ruling out those which cannot)? (d) Which of these can be reasonably sure to be of lasting value to the patient (again, ruling out those which cannot)? (e) When is the best time to accomplish what has been determined as practicable to avoid unduly prolonged treatment? In most cases such a procedure will inevitably result in reduced treatment programs.
- 4. Abandon the "all or none" attitude. This is the attitude which draws itself up with a look of offended dignity and says, "I do only the best for my patients; I wouldn't consider attempting anything else." By the "best" is meant comprehensive treatment of all detectable departures from the ideal in all cases, until success is achieved or everybody gets tired of the whole business and quits. I am sure that many orthodontists have firmly and sincerely believed this attitude to be based on ideals which they felt it important to uphold. It is tantamount to saying, "You can either buy a Cadillac or walk-take your choice." There may have been some excuse for this attitude in the past in the early, growing days of orthodontics, but I believe there is none whatever now. As with any young and growing organism in the process of learning, there was a need for rigid standards and rigid control, right or wrong, to prevent the unchecked use of slipshod, halfway measures. Now that orthodontics is reaching maturity, that time is long past. A competent orthodontist should not be bound by rules or conventions. If he cannot be trusted to use his judgment wisely in the best interests of the patient, he should not be trusted to undertake any treatment at all, no matter how standardized and "idealistic." We have all seen cases in which rather extensive treatment is indicated and justified but where the circumstances of the patient will not permit it. It is often possible to pick out one or two aspects of such cases which represent the principal handicaps, treat these and these only, and do an invaluable service for a patient who would otherwise go unaided. This represents true service. It is in no sense charity. It allows the patient to keep his dignity and rewards the orthodontist for his services economically as well as any other form of treatment and, in terms of satisfaction, I believe much more so. He can treat several of these patients in the same time it takes to treat one, comprehensively.
- 5. Restrict or eliminate the use of standardized routine procedures unless they have a real value. Orthodontists are prone to limit their services through the inclusion of routine procedures in their practices, either unthinkingly or

through fear of criticism. Time does not permit a thorough discussion of this, yet much could be said of the fallacies of using complicated appliances routinely where simpler ones would often do as well; of following preconceived treatment plans unchanged throughout treatment; of routinely basing important treatment decisions upon casts, photographs, and cephalometric x-ray pictures instead of upon the patient himself; of routinely subjecting all patients to a set of diagnostic procedures where often these can have no relation to the problems at hand. The latter is well illustrated by the present situation with regard to the use of x-ray cephalometry. There is no doubt of the usefulness of this technique in research, teaching, and, sometimes, in the treatment of orthodontic cases. The practicing orthodontist is presently told, either directly or by implication, that he is remiss unless he has this equipment and uses it routinely for all of his patients. This is patently absurd. The treatment of many orthodontic cases will not be altered one iota by the use of x-ray cephalometry simply because they involve nothing of interest or value to be shown by this means. In others what is shown could be seen as well by the orthodontist using his brain and his own two eyes. This is not to deny the use of the cephalometric x-ray picture as a rational diagnostic aid. If you can get this equipment, or access to it, by all means use it to help with the otherwise difficult diagnoses. If you cannot get it, do not let it worry you too much.

A practical viewpoint toward all of our practice procedures is: use them unhesitatingly where they are really indicated but do not forget that they take up time which *might* be spent more productively and that the time, effort, and materials must be paid for by somebody.

I have listed a number of ways in which we might depart from traditional attitudes and practices. All of these make for an extension of our services by lowering the cost of orthodontic treatment to the patient, by increasing the number of patients who can be handled, and this without economic loss to the orthodontist. The patient is benefited in addition because he is saved unnecessary or unproductive treatment, much time and trouble in keeping appointments, and he is allowed to pursue other, perhaps more important, activities with less interference. The orthodontist also derives additional benefits. He has the satisfaction of spending his time in doing worth-while things only. He avoids the mistake of selling himself along with his services. Since he deals with grateful patients and parents, he will find them more than usually cooperative and anxious to please him in return. This makes for a maximum of cooperation without which any treatment is doomed to failure. He will have, finally, the satisfaction of having extended his services materially and of having treated many more patients within the same limits of time and effort. It boils down to an attempt to provide a sound, highly individualized service for each patientnot inferior treatment—simply treatment devoid of frills and gingerbread. I realize that at many points my suggestions are at odds not only with our traditional methods of practice but with our traditional concepts and points of view. They may involve sacrifices, readjustments, and the necessity for breaking with tradition. Let me remind you that these have been essential to most of the progress we now enjoy.

Changes in the practice of orthodontics, however, are not enough. matter how sincerely the orthodontist strives to meet needs in the public interest and no matter how effectively he adjusts his activities to that end, he will still no more than better the situation. There will still be a large unmet need. In addition to those who can still not afford orthodontic treatment, there will be people who cannot be treated because the orthodontist simply does not have time or because he does not exist within a reasonable distance of their homes. In spite of opinions to the contrary I believe much could be accomplished through friendly, effective cooperation with our colleagues in other branches of dentistry. Before we can make much headway in this direction, however, we must do something toward deciding exactly what we mean by a specialist. There seem to be two possible definitions. The first is that a specialist is a guy who has a corner on everything which can conceivably be included in his field. This appears to be the accepted one in some quarters but, personally, I do not like it. It is essentially a trade guild definition—not a professional one. The second is that a specialist is a person better qualified by training, experience, and ability to handle the more difficult problems occurring within his field and, perhaps, to handle the simpler ones as well, but more expeditiously. This I believe is a valid definition and it has the advantage of leaving room for the general practitioner in the picture.

There has been great difficulty in determining the role of the general practitioner in orthodontics because of a strong and sincerely held contention on the part of many orthodontists that it is impossible to distinguish a simple case from a difficult one. It has been on this basis that the clinical treatment of orthodontic cases has been largely excluded from undergraduate dental pro-Lacking the basic training given to other branches of dentistry, the general practitioner has not been prepared to take his part in the treatment of orthodontic cases. One has only to study the recent reports of the Committee on Instruction in Orthodontics14 and of the Committee on the Teaching of Dentistry for Children<sup>15</sup> of the American Association of Dental Schools to realize that this situation is rapidly changing. It is certainly true that nobody can absolutely guarantee that an apparently simple case may not prove to be complicated in the course of its treatment. Such infallibility is not expected in all the cases that are seen by the general practitioner of medicine, whether they be measles, head colds, or indigestion. Unlike orthodontic cases these seemingly simple indispositions may develop into matters of life or death, and yet most of us as patients or parents would be outraged if we were required to seek the services of a specialist on every occasion. There appears now to be rather widespread acceptance of the practicability of picking the simple case from the complicated one. The report of the Committee on Instruction in Orthodontics, just referred to, indicates a rapidly growing desire on the part of dental educators, orthodontists included, to make a good basic clinical training in orthodontics a part of the undergraduate course. This desire was echoed by the Committee on the Teaching of Dentistry for Children. The latter cited as common ground of both the pedodontist and the orthodontist certain territory that has been regarded in the past as solidly within the province of orthodontics. On

their presentation both of these reports were received with a significant lack of objection. If you have any doubt as to which way the wind blows, I recommend them to you for your study. It is to be hoped that, in the not too distant future, our dental schools will be graduating dentists with a sound, basic knowledge of orthodontics both from the theoretical and the clinical standpoint and with the skill and technical ability to treat the simpler cases; dentists who will know their own limitations and unhesitatingly refer cases to the specialist when that is indicated.

It is to be hoped also that the dental courses can be so changed that they will succeed in doing a far better job in laying the groundwork for the prevention of malocclusion. It is obvious to everyone that the general practitioner is in a far better position both to detect the need for prevention and, often, to institute preventive measures. Indeed many of the most important preventive measures are within the hands of the general practitioner. Yet much of the prevention that could have been accomplished has not occurred. This to me is one of the outstanding indictments against our present methods of dental education. The overemphasis upon mechanics and mechanical procedures has so usurped the time and the interest of the student that the intellectual concepts and the procedures that underlie prevention are drab and uninteresting by comparison. It is obvious that this must be changed if we are to utilize the knowledge already at hand in preventing or intercepting malocclusion.

For this reason as well as others it is important for all of us to give some thought and attention to the very great problem of recruiting the bright capable young men we need in dentistry. This is not a simple matter. As I pointed out before, there is currently a fierce competition for really good students. Dentistry, less spectacular and with less emotional content than medicine, less rewarding financially than many forms of business, and less in keeping with the comic book world of Buck Rogers than physics, is at a considerable disadvantage at the start. There are, however, many good reasons which induce talented and thoughtful young men to come into the dental field. It behooves all of us to take an active interest in this problem and to work actively to recruit really good young men.

So much for the long-range problem. For the present, I believe a most practical step would be to provide a more friendly, congenial sphere of cooperation between the orthodontist and the man in general dentistry. Toward that end I should like to make the following proposal: that ways and means be studied to select competent and responsible practitioners in areas not now adequately served; that they be offered courses in orthodontics either by dental schools or by local orthodontic societies; that these courses give an appropriate background for the treatment of orthodontic cases, a degree of judgment in selecting the relatively simple cases to be treated and the treatment methods to be applied in these cases. Such courses alone are not enough. There should also be a consultation service which would fill two roles. First it should help the general practitioner in making the initial decision as to whether or not he should treat a case and, if so, how he should go about it, and, second, it should

stand ready to assist him and give him advice whenever he gets into difficulty. There is no doubt that a great deal of good could be done in this way without interfering with the present activities of the specialist in orthodontics.

Finally, some provision should be made by the orthodontic societies for the recognition of general practitioners who perform this extremely valuable service. More recognition should be given to ability and competence in practice and less to the highly superficial and trivial requirement of exclusiveness. As a society member, I protest against our precepts which imply that a man may do poor orthodontics but if he does it all the time he is acceptable, while, on the other hand, a man may be well qualified and competent but if he does not confine himself to the practice of orthodontics he is an outcast. This is definitely a trade guild concept, not a professional one. It should be changed, not because of the orthodontist, not because of the general practitioner, but in the interests of extending orthodontic service in behalf of human welfare.

In conclusion let me revert for a moment to emphasize again the importance of fitting our treatment to the needs of the patient—to aim not at dental perfection but at a removal of handicaps—to seek for the patient a condition that will be good enough for his purposes, so that he will not have to worry about it and so that he can safely forget about it. Instead of doing much for a few, this approach will allow us to do all that is worth while for many. It is not a lowering of standards nor is it in any sense a recommendation for careless, slipshod methods. It demands more careful, mature thought than a conventional approach and a much more thorough knowledge of the patient. The end result will equal that of much longer, more comprehensive periods of treatment and the cost to the patient will be much lower, though the orthodontist will be just as well paid for his time and effort.

A recent novel, The Catcher in the Rye, 16 contains a pertinent thought. It runs as follows: "The mark of an immature man is that he wants to die gloriously for a great cause, a mature man wants to live humbly for one." Orthodonties as a profession is arriving at maturity. Its achievements from now on will be measured not in the size or splendor of its offices, the glitter of its equipment, or the elaborateness of its procedures, but in the practical everyday success it makes in service to the public.

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## Erratum

In the article by Captain Peter J. Ceremello entitled "The Superior Labial Frenum and the Midline Diastema and Their Relation to Growth and Development of the Oral Structures," which appeared in the February issue of the Journal, Figs. 5 and 6 were transposed.

# A RADIOGRAPHIC CEPHALOMETRIC CONSIDERATION OF FACIAL GROWTH DURING ORTHODONTIC TREATMENT

ROBERT W. DONOVAN, D.D.S., M.S.D., CHICAGO, ILL.

A S WE examine the records of a large series of corrected malocclusions a wide variation in time of treatment and degree of success is noted. It becomes apparent that factors other than mechanical orthodontic manipulation have an influence.

Biological contributions have been described by many investigators, but the problem is especially well stated by a quotation from Hellman<sup>1</sup>:

Thus, in a general summary of what was said, it may be pointed out that the effect of orthodontic appliances influences favorably certain changes in position and occlusion of teeth, and in form and relationship of alveolar and dental arches. The effect of orthodontic appliances influences unfavorably the roots of the teeth and the tissues surrounding them. The result aimed at and frequently attained is normal occlusion. Whatever else happens in the course of orthodontic treatment, such as increase in size, change in form and alteration in position of the jaw bones and the rest of the face, is due to conditions over which our mechanical devices have no influence and no control. We are thus inadvertently brought to the conclusion that, after all, the dualism bisecting the nature of our problem does not suggest two separate halves. It rather suggests that both halves must be combined for the purpose of making up a complete whole. But to uphold the integrity of the whole, we must be mindful of two facts: namely, that while mechanics furnishes the means by which the possibilities of orthodontic practices are realized, biology reveals a boundary of limitations within which our practices must be confined.

The fact that facial growth is a part of the biological boundary has been known for a long time. Broadbent<sup>2</sup> emphasized its importance in discussing the facial growth of a set of twins under his observation.

This failure of the facial mass of the twin T to emerge from under the brain case and attain the same proportion in relative position to the cranium that the control twin C has attained is in the writer's opinion one of the greatest handicaps that orthodontic therapy is called upon to face.

Brodie<sup>3</sup> also considered facial growth to be of great importance to the orthodontist when he stated:

It would seem that our only hope for progress lies along the road which starts with the realization that it may be possible to find means of determining the course of development of any given face and to predict its ultimate potential.

Downs and Moore have done much to relate orthodontic treatment and the growth factor. Downs's "Y" axis has especially focused wide attention on the growth trends before, during, and after orthodontic treatment. Downs has recently stated:

From the Department of Orthodontics, Northwestern University Dental School.

Presented at the meeting of the Central Section of the American Association of Orthodontists, Omaha, Neb., Oct. 13, 14, and 15, 1952.

Skeletal patterns are relationships over which we have very little control in orthodontic treatment except by the use of surgical techniques. We must not forget, however, that in most of our cases maturation is going on and that there are variations between individuals in the downward and forward direction of growth of the face. In other words, there are three possibilities to consider: (1) horizontal and vertical growth may be equal, in which case the direction of growth (Y axis) will not change; (2) horizontal growth will exceed vertical growth and the Y axis angle will decrease, indicating a forward swing of the face; (3) the other alternative would be where vertical growth exceeds horizontal growth and the Y axis angle increases. The manner in which the face grows during and after treatment has a significant bearing on the prognosis of a case.

During the progress of an extensive investigation on the influence of facial growth during orthodontic treatment, it soon became apparent that the application of mean values to specific individuals added a certain glow of scientific satisfaction, but very little tangible practical value.

In spite of wide individual variation, the various cases under consideration formed into several quite distinct groups. It is the purpose of this short paper to present examples of these groups for examination relative to the application of individual characteristics to practical orthodontic treatment procedures.

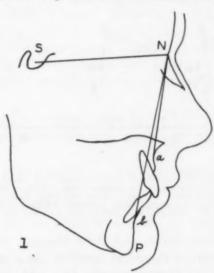


Fig. 1.—Nasion (N), this is the anterior point of the junction of the frontal and nasal bones.

Sella turcica (8), the center of the bony crypt occupied by the hypophysis cerebri in the body of the sphenoid bone.

Point a, a point used in the Downs analysis to signify the juncture of the maxillary nasal bone and alveolar bone. Used here as representing the anterior terminus of the maxillary apical base. Located at the depth of the curvature between the anterior nasal spine and the crest of the maxillary alveolar process.

Point b, a point used in the Downs analysis to signify the juncture of the mandibular basal bone and alveolar bone. Used here as representing the anterior terminus of the mandibular apical base located at the depth of the curvature between the most anterior point on the symphysis of the mandible and the crest of the alveolar process.

The Broadbent-Bolton cephalometer<sup>6</sup> was used in obtaining the lateral radiographs necessary for this investigation. Described frequently in the literature, there is no need to repeat its description or use.

The material used in this study consisted of cephalometric radiographs taken with the mandible at rest position and with the teeth in occlusion on eighty-seven individuals possessing malocelusion of the teeth. The radiographs

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were made before, during, and subsequent to orthodontic correction of the malocclusions. The number of cephalometric examinations made on each patient varied from a minimum of three to a maximum of eight. All told, four hundred eighty radiographs in occlusal position and a like number in physiologic rest position were traced and compared. All of the records were obtained from the office files of Dr. J. R. Thompson. Approximately two thousand six hundred individual measurements were made on these tracings.

Landmarks and points used consisted of (N) nasion, (S) sella turcica, (a) maxillary apical base, (b) mandibular apical base, (P) pogonion, maxillary central incisor and mandibular central incisor (Fig. 1). Angles measured included SNa, SNb, SNP, NSa, NSb, maxillary incisor to SN and mandibular incisor to SN.

Superposing of serial tracings was done on the SN line with point S as the constant reference point. There are many ways and methods of superposing serial tracings, depending upon the landmarks favored or upon the problem being studied, but, for purposes of simplicity, the above method will be the only one described.

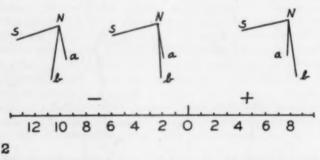


Fig. 2.—Prognosis and treatment of malocclusion are aided by a knowledge of apical base relation. Large minus readings (SNa greater than SNb) indicate a very poor apical base relation and unfavorable prognosis. Small minus readings indicate an excellent apical base relation and favorable prognosis. Large plus readings (SNb is greater than SNa) indicate a very unfavorable apical base relation and extremely unfavorable prognosis.

Because of their importance, and their frequent mention, the angles SNa and SNb and their difference should be familiar. As scientifically established by Reidel<sup>7</sup> and elaborated by Thompson,<sup>8</sup> the SNa SNb difference is a method of establishing the relation of the maxillary apical base to the mandibular apical base. Thompson subsequently pointed out that the most favorable orthodontic results will be obtained in those cases where the relation of the mandible to the maxilla is within the range where there is a harmonious relation of the apical portions of the lower teeth to the upper teeth. Because of the favorable apical relations of the facial bones and, hence, favorable relations of the apical portions of the teeth, establishing good occlusal relations is largely a problem of mechanics. On the other hand, if the relation is unfavorable, compensations in anteroposterior tipping of the teeth, no matter how undesirable it may be, are required in order to reduce the malocclusion. (Fig. 2.)

For reasons of orientation and introduction, three cases are presented. All three are classified as successful orthodontic results. They have very similar

facial patterns, but very different facial growth trends, and different mechanical treatment plans. Notice especially in the individual cases:

- 1. Any change in angle SNa value.
- 2. Any change in angle SNb value.
- 3. The change in SNa SNb difference.
- 4. The increase in SN length.
- 5. Relative amount of horizontal growth.
- 6. Relative amount of vertical growth.
- 7. Change of incisor positions and inclinations.

The before treatment tracing in Table I (5/47) shows an SNa SNb difference of 4.5 degrees, indicating a fairly good relation of maxillary and mandibular bases. The after treatment tracing (10/49) shows an improvement in the incisor overbite and overjet, stable axial inclinations of the incisors, and even a more favorable apical base relation. (SNa SNb difference is 3 degrees.)

Comparing the changes during orthodontic treatment it is noted that the patient enjoyed a favorable amount of both horizontal and vertical facial growth. The millimeter distance between S and N increased, the angle SNa decreased very slightly, and angle SNb increased, resulting in the improvement of apical base relation. (SNa SNb difference changed from 4.5 to 3.) The excellent growth pattern during treatment made it possible to avoid excessive tipping of incisors to allow a more healthy, stable, and esthetic result. The mechanical problem consisted of obtaining an adequate arch length without disturbing the anterior teeth too much.

The before treatment tracing in Table II (6/48) shows a fairly good relation of maxillary and mandibular apical bases. (SNa is greater than SNb by 5 degrees.)

Comparison of the before and after treatment tracings shows a considerable amount of horizontal facial growth and not nearly so much vertical growth. The millimeter distance between S and N increased, the angle SNa increased from 75 to 77 degrees, and the angle SNb increased even more (from 70 to 73 degrees).

This considerable amount of horizontal growth allowed the successful expansion and advancing necessary to correct the shortened arch length problem, but the lack of sufficient vertical growth forced a labial tipping of incisors to correct the overbite. This labial tipping is excessive due to a certain amount of loss of tooth control during arch advancement.

The before treatment tracing in Table III shows an SNa SNb difference of 3 degrees, indicating an excellent relation of apical bases.

Comparison of the before and after treatment tracings points out a considerable amount of vertical facial growth and only a limited amount of horizontal growth.

The increase of angle SNa and the relative constancy of SNb results in an increase of the SNa SNb difference from 3 degrees to 4 degrees, still a good apical base relation.

TABLE I (Fig. 3)

	13-6 YE, 5/47	14-8 YR. 7/48	15-10 YR. 10/49
SNa	77.5	76.0	77
SNb	73.0	72.0	74
	-4.5	-4.0	-3
SNP	74.0	73.5	75

Without a great deal of horizontal growth to aid in correcting the shortened arch length, attaining a pleasing and stable position of the incisors poses a tremendous challenge. The overbite factor is relatively a minor problem due to the more than adequate vertical growth.

TABLE II (FIG. 4)

	10-8 YR. 6/48	11-8 YR. 6/49	13-9 YR. 7/51
SNa	75	76	77
SNb	70	72	73
	-5	-4	-4
SNP	71	73	74

After a careful consideration of the individual characteristics, a comparison of the three cases should prove interesting.

All three have a fairly good or excellent relation of maxillary to mandibular apical bases, as indicated by the small SNa SNb difference. Thus the orthodontic problem is one of tooth relation, not an apical base disharmony. Overbite, overjet, and shortened arch length must be corrected and facial esthetics must not be disturbed.

TABLE III (Fig. 5)

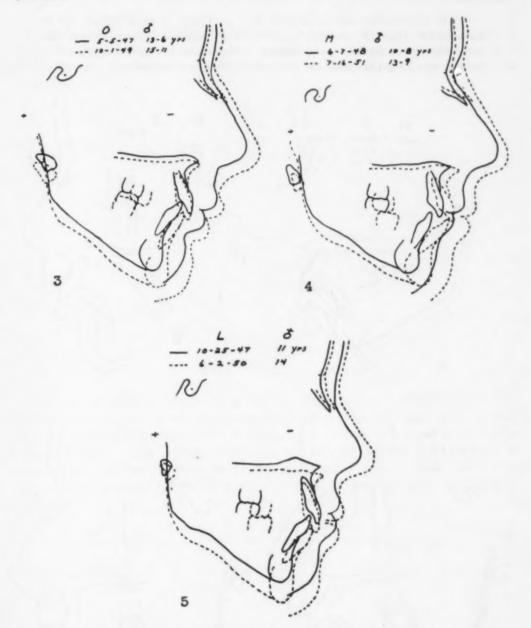
	11-1 YR. 10/47	12 YR. 9/48	13 YR. 9/49	13-9 YR 6/50
SNa	77	79.5	79	78.5
SNb	74	75.0	75	74.5
	-3	-4.5	-4	-4.0
SNP	74	76.0	75	75.0

Fig. 3 demonstrates a fairly equalized amount of horizontal and vertical facial growth; Fig. 4 shows a preponderance of horizontal growth over the vertical facial growth; Fig. 5, a trend of more vertical growth than horizontal facial growth.

Because of the loss of lower first molars in Fig. 3 the extraction of upper first premolars was resorted to in the correction of the shortened arch length. The excellent horizontal growth made is necessary carefully to guard against excessive lingual positioning of maxillary incisors in closing extraction spaces, and the adequate vertical growth aided in the stable correction of the overbite.

In Fig. 4 tremendous horizontal growth allowed arch expansion and advancement to correct shortened arch length, but lack of vertical growth made the overbite correction a problem of labial tipping of incisors. Extraction here would result in very extensive and long orthodontic treatment to attain an acceptable overbite relation.

Fig. 5 shows a predominantly vertical growth pattern when compared to the other two cases. Extraction of four first premolars allowed a slight lingual tipping of the maxillary incisors and the stable correction of the overbite problem.



Thus, three cases with similar facial patterns, shortened arch length and overbite achieved successful results with very different treatment procedures, due mainly to the distinct difference in the facial growth trends.

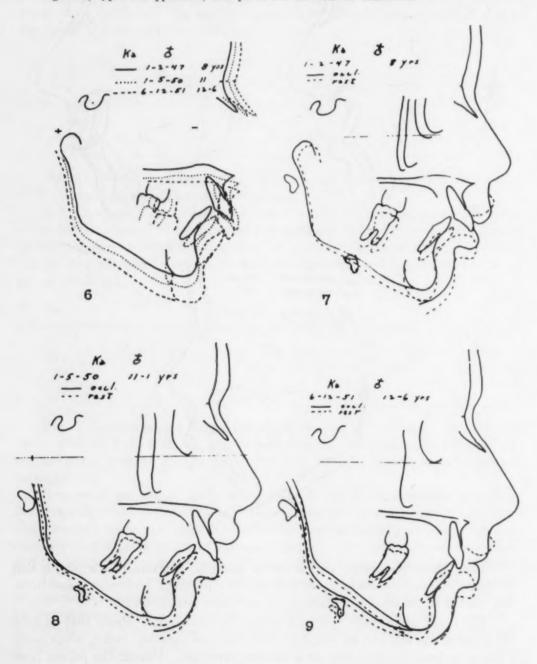
The series of tracings in Fig. 6 tell an unusual story. From 1947 to 1950 the point a has enjoyed an excellent horizontal and vertical trend, while point b seems to have dropped only in a vertical direction. During the period from

1000mm 100mm 10

the 1950 to 1951 tracing, point a moves mainly vertically and point b takes a tremendous horizontal and vertical spurt.

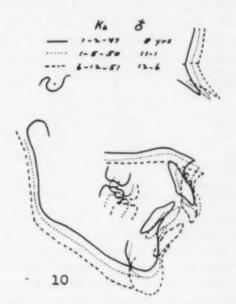
A good deal of this sudden change can be explained in a statement by Thompson<sup>9</sup>:

The displacement that occurs in a large percentage of cases of this type of malocclusion (Class II) probably explains the difference in clinical response that has always been observed by practicing orthodontists and often attributed to growth, types of appliances, and particular methods of treatment.



Comparison of the composite physiologic rest position and occlusal position tracings will be of value. In Fig. 7 representing 1947, the incisal tip of the mandibular central incisor travels in an upward and backward direction when passing from physiologic rest position to the occlusal position. In Fig. 8 (1950) the path of closure is still in an upward and backward direction.

As emphasized by Thompson,<sup>9</sup> this path of closure is usually indicative of malfunction, and when due to faulty tooth position is, in most cases, changed to an upward and forward path of closure when the occlusion is corrected. Fig. 9 shows the change in the path of closure upon completion of the orthodontic treatment.



The true growth trends in a case of this type are obtained from the physiologic rest position tracings and not the occlusal tracings. Fig. 10 still shows a great change from 1950 to 1951, but traces a smoother, more evenly balanced trend. The relative constancy in the physiologic rest position is demonstrated rather dramatically in composite serial tracings, and points out the value of frequent functional analysis before, during, and after orthodontic treatment.

TABLE IV (FIGS. 6, 7, 8, 9, AND 10)

	8 YR. 1/47	9 yr. 1/48	10 yr. 1/49	11 YR. 1/50	12-6 YR 6/51
Occlusal	Tracings				
SNa	81.5	80	80	81	80.0
SNb	71.5	70	71	70	73.0
	-10.0	-10	-9	-11	$\frac{73.0}{-7.0}$
SNP	74.0	72	73	· 72	74.5
Rest Posi	ition Tracings				
SNa	81.5	80	80	81	80.0
SNb	72.5	71	$\frac{72}{-8}$	71	72.0
	-9.0	$\frac{71}{-9}$	-8	-10	-8.0
SNP	75.0	73	74	73	73.5

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TABLE V (Fig. 11)

	8 YR. 10/46	9 YR. 10/47	10 YR. 10/48	11 YR. 10/49	12 YR 10/50
SNa	83	82	82	81	82.0
SNb	74	74	75	75	76.5
	-9	-8	-7	-6	-5.5
SNP	76	76	77	77	78.0

In Fig. 11 the 1946 tracing shows an apical base difference of -9, a poor relation. From 1946 to 1949 the SNa angle decreased and the SNb increased to change the difference to -6. During this time, from point S, point a traveled in a predominantly vertical direction and point b traveled in a balanced vertical and horizontal direction. From 1949 to 1950 both points a and b moved in a horizontal and vertical path. With the improved apical base relation, and the favorable growth trends, the overbite and overjet were improved by slight tipping to a stable and esthetic relation.

TABLE VI (Fig. 12)

	11 YR. 3/47	12 YR. 4/48	13 YR. 4/49	14 YR. 4/50
SNa	78	78.0	79	79.0
SNb	72	73.0	75	75.5
	-6	-5.0	-4	-3.5
SNP	74	75.5	77	77.0

In comparing Figs. 12 and 13 it should be noted that Fig. 12 shows a definite horizontal growth trend and Fig. 13 has a predominantly vertical tendency. With both cases having an apical base relation improving from only fair to good (-7 to -4 and -6 to -3.5), the vertical growth case required tipping to produce incisor relation, but the horizontal growth case was improved by mainly holding. In other words, if both cases have shortened arch length the

TABLE VII (Fig. 13)

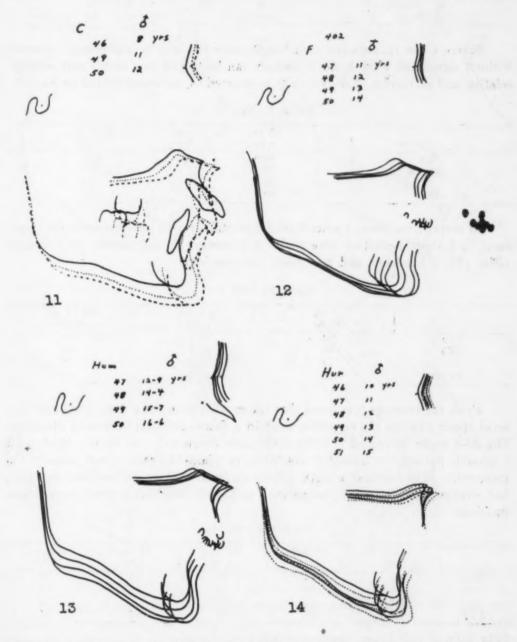
	12-9 YR. 1/47	14-4 YR. 7/48	15-7 YR. 10/49	16-6 YR 9/50
SNa	80	79.0	78	77
SNb	73	72.5	73	73
	-7	-6.5	-5	-4
SNP	74	73.5	74	74

vertical growth usually requires extraction and the horizontal growth does not. In Fig. 13 the apical base relation improved by SNa becoming smaller and SNb remaining the same. In Fig. 12 SNa remained relatively the same and SNb became greater.

TABLE VIII (Fig. 14)

	10 yr. 6/46	11 YR. 10/47	12 YR. 10/48	13 YR. 10/49	14 YR. 7/50	15 YR. 6/51
SNa	80	79	78.0	78	76.5	76.5
SNb	72	71	70.5	72	72.0	73.0
	-8	-8	-7.5	-6	-4.5	-3.5
SNP	74	73	72.5	74	74.0	75.0

Fig. 14 is included to show a definite and sudden change in the facial growth trend. Under treatment in 1946, 1947, and 1948 the progress was slight and difficult; between 1948 and 1949 a distinct change occurs from primarily mandibular vertical growth to vertical and horizontal growth. During that



year the case was successfully treated and retained. Posttreatment tracings record the horizontal and vertical trend continuing. Apical base improvement from -8 to -3.5 was accomplished by SNa becoming smaller and SNb slightly larger.

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TABLE IX (Fig. 15)

	10-4 YR. 6/49	11-6 YR. 8/50
SNa SNb	82 73	82 74
SNP	-9 74	-8 75

Severe Class II, crowded arch length cases can also be successfully treated without significant growth aid if incisors can be tipped to a stable and esthetic relation and extraction of dental units is resorted to, as demonstrated by Fig. 15.

TABLE X (Fig. 16)

	12 YR. 9/50	13-2 YR. 11/51
SNa	86.0	87.0
SNb	79.5	$\frac{82.0}{-5.0}$ 82.5
	-6.5	-5.0
SNP	0.03	82.5

In certain instances tremendous horizontal growth aids orthodontic treatment in a short period of time under a minimum of appliances—in this case (Fig. 16), a headgear and bite plate combination.

TABLE XI (Fig. 17)

	13 YR. 11/48	14-2 YR. 1/50	14-11 YR. 10/50
SNa	74	72.5 67.5	73
SNb	68	67.5	66
	-6	-5.0	-7
SNP	70	69.5	67

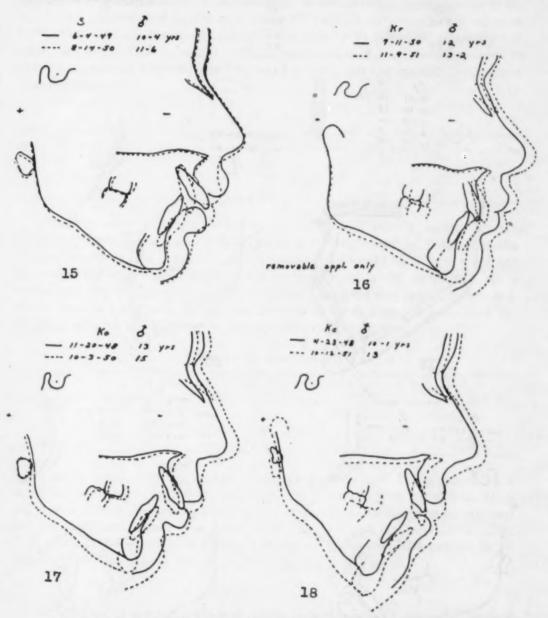
From the tracings it is noted that the maxilla followed a downward and forward trend whereas the mandible went in a downward and backward direction. The SNa angle decreased, but the SNb angle decreased even more. With such a growth pattern, orthodontic treatment in Class II cases is not usually too successful. The vertical growth allows an improvement in overbite relation, but overjet, incisor axial inclination, and arch lengths present tremendous problems.

TABLE XII (FIG. 18)

	9 YR. 4/47	10 YR. 4/48	11 YR. 4/49	12 YR. 4/50	13-6 YR 10/51
SNa	75	76	77	75	76
SNb	68	69	70	68	68
	-7	-7	-7	-7	-8
SNP	67	68	69	67	67

Maxillary growth direction follows a fairly normal downward and forward trend, but the mandible has a definite vertical pattern. Compared to Fig. 17 a striking similarity is noted until overbite, mandibular plane inclination, and ramus height are considered. With a short ramus height and the very steep

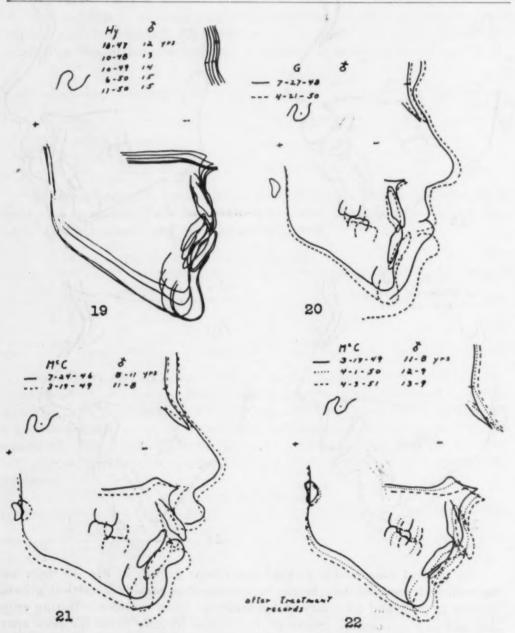
mandibular plane inclination, tremendous mandibular vertical and horizontal growth must occur during tooth eruption and orthodontic treatment if an open-bite is to be avoided.



In spite of considerable vertical mandibular growth in Fig. 18 there was not sufficient posterior face height to accommodate maxillary vertical growth, alveolar growth, and maxillary and mandibular tooth eruption. During eruption and also orthodontic treatment, the molars literally force the jaws apart as the limited posterior height is expended. The advisability of the elimination of molar units in such instances should be thoroughly considered and investigated.

TABLE XIII (Fig. 19)

		11-11 YR. 10/47	15 YR. 11/50	
SNa SNI		79.0	76	
SNO	*	70.5	77	
SNP		78.0	79	



During orthodontic treatment from 1947 to 1949 the tracings show an adequate growth trend for the problem at hand. Under retention, the trend suddenly changed to an almost wholly horizontal direction. The incisors came to an end-to-end relation and finally to a Class III relation without change of axial inclination. As SN increased in length, the angle SNb remained relatively the same, but angle SNa decreased. When compared to S, the maxillary growth shows a consistent downward and forward growth, but the mandibular pattern changed drastically.

TABLE XIV (Fig. 20)

	7/48	4/50
SNa	69	67
SNb	70	71
	+1	+4
SNP	71	72

Tracings show a very unfortunate combination of growth factors for the orthodontic problem at hand. With point b already ahead of point a at the start of treatment, the favorable growth combination would be to have a definite horizontal growth of the maxilla and a vertical trend in the mandible. As it turned out, the exact opposite occurred during treatment and is still continuing. Serial records are especially valuable in such cases as Figs. 19 and 20 in explaining adverse esthetic results beyond orthodontic control.

TABLE XV (Figs. 21 and 22)

		8-11 YR. 7/46	11-8 YR. 3/49	12-9 YR. 4/50	13-9 YR 5/51
SNa		75.5	77.0	78	77.0
SNb		67.5	70.0	71	70.0
0137m	115	-8.0 .	 -7	-7	-7.0
SNP		69.0	70.5	72	71.5

Due to labial position of the maxillary incisors and the presence of a shortened arch length in both arches, four first premolars were extracted. During treatment the position and inclination of the lower incisor was maintained and the maxillary incisor was tipped to an esthetic and stable position. The three tracings after treatment present a relatively constant growth pattern being continued, and emphasize the stability of the treatment result.

#### DISCUSSION

Of what value are all of these carefully collected serial tracings? Do they have any practical clinical application? Or are they merely interesting postmortem records? Concrete conclusions and accurate statistical evaluation must await completion of the entire study now under way, but some trends and characteristics seem to be fairly obvious at this date.

Cases included in this study fell in the approximate age range of 9 to 16 years and were under active orthodontic treatment on the average of 2 to  $2\frac{1}{2}$  years.

1577 1

As indicated by the examples presented, there was much variation in dental malocclusion, apical base disharmony, treatment plans, treatment results, and facial growth trends. The great majority of the successfully treated cases showed favorable growth trends and the failures presented either extreme apical base disharmony or unfavorable growth trends.

Brodie, Downs, Goldstein, and Myer<sup>10</sup> stated in an article a few years ago:

There seems to be a definite correlation between success in treatment and growth. The adult cases, although clinically successful so far as the maintenance of occlusal relations is concerned, are not so markedly improved esthetically.

Many factors contribute to the facial growth during this period. Variation in growth sites, amount, and direction is considerable. Considered here are only a few important factors—the change in the value of angle SNa and SNb, the direction of growth from point S of the maxillary apical base (point a), and the direction of growth from point S of the mandibular apical base (point b).

TABLE XVI. ANGLE SNA

		DECREASES	REMAINS SAME	INCREASES
	Decreases	Difference same	Difference + increases	Difference ++
Angle SNb	Remains same	Difference - decreases	Difference same	Difference + increases
	Increases	Difference - decreases	Difference - decreases	Difference same

From Table XVI it can be seen that many combinations are possible in the apical base relation. If there is a severe discrepancy where point b is behind point a by several degrees (a high minus difference), the growth combination most favorable would be a decrease in SNa and an increase in SNb. If there is an apical base relation where point b is ahead of point a (a plus difference), the most favorable growth combination would be an increase in SNa and a decrease in point b.

Because of the fact that SN can also increase in length during this period, the value of SNa or SNb can really decrease, but still points a and b can be moving on a path away from point S.

If SN remains the same length during treatment:

1. Horizontal growth path of a	SNa increases	+++
2. Horizontal and vertical growth path of a	SNa increases	++
3. Vertical growth path of a	SNa increases	+
1. H growth path of b	SNb increases	+++
2. H and V growth path of b	SNb increases	++
3. V growth path of b	SNb increases	+

# If SN increases slightly in length during treatment:

1. H growth path of a 2. H and V growth p 3. V growth path of	oath of a SNa	increases increases decreases	+
1. H growth path of 2. H and V growth p 3. V growth path of	oath of b SNb	increases increases decreases	+

If SN increases greatly in length during treatment:

2. H	growth path of a and V growth path of a growth path of a	SNa increas SNa decreas SNa decreas	es -
1. H	growth path of b	SNb increase	es +
2. H	and V growth path of b	SNb decreas	es -
	growth path of b	SNb decreas	es

During a specific period of time of treatment, the combination of growth that can occur may vary considerably. Over a period of years, though, the general trend of the individual is usually quite constant. The actual change in SNa SNb difference during the two to three years of orthodontic treatment is seldom great, although a degree or two change at an older age, when the face is longer, is much more significant in actual horizontal millimeter relation than the same degree or two at an early age or in the short face.

The SNa SNb change that occurred during treatment in a group of 89 cases is shown in Table XVII.

TABLE XVII. ANGLE SNA

		REMAINED			
		DECREASED	SAME	INCREASES	TOTAL
	Decreased	23	3	1	27
		(20)*	(2)		(22)
Angle	Remained	15	9	4	28
SNb	same	(14)	(3)	(2)	(19)
	Increased	10	11	13	34
		(6)	(8)	(7)	(21)
	Total	48	23	18	
		(40)	(13)	(9)	

<sup>\*</sup>Figures in parentheses, from Carlson.

It will be noted that it was fairly evenly divided whether Angle SNb decreased, remained the same, or increased. SNa, on the other hand, showed a greater number of eases in the decreased column. This might indicate that orthodontic treatment could have some influence on the growth path of point a.

In a study on the facial pattern of a group of Swedes at 12 years of age and at 21 to 22 years, Bjork<sup>12</sup> had the following comments:

The average change in shape of the cranial base is very slight, and the same is also true of the inclination of the ramus and the size of the jaw angle. The profile, on the other hand, exhibits an appreciable change with increased prognathism of both jaws, somewhat greater in the lower jaw than in the upper. The overjet consequently diminishes somewhat on the average. The profile becomes straighter, the chin more pointed and the incisors of both jaws become more upright with age. We find, however, that individual cases deviate very considerably in almost every detail from these average growth changes.

Although covering a greater time span and using different measuring points, Bjork's findings on his untreated group seem to lend some weight to the fact that orthodontic treatment does influence the growth direction of point a.

Aside from the apical base relation, growth trends from point S are interesting and seem to be important in orthodontic treatment. When related to point S, the maxillary apical base (point a) may travel:

- 1. Mainly horizontal.
- 2. A combination of horizontal and vertical.
- 3. Mainly vertical.

The mandibular apical base (point b) may also travel any of the directions named, and also in certain cases in a backward direction.

Being the result of independent growth sites, there is the possibility of various combinations of horizontal and vertical growth in the maxilla and mandible. Treated cases seem to show that orthodontic forces can somewhat inhibit the horizontal growth path of point a, but can seldom increase it; thus in instances of a high minus value of  $SNa\ SNb$  (point a ahead of point b), the treatment must be mainly maxillary alveolar inhibition, whereas in instances of plus values of  $SNa\ SNb$  (point b ahead of point a), the treatment must be mainly in the mandibular arch.

The orthodontic treatment of Class II malocclusion seems to depend to a great extent on the inhibiting forces applied to the maxillary arch.

- 1. Class II elastics.
- 2. Cervical or occipital appliances.
- 3. Bite plates.
- 4. Oral shields.
- 5. Muscle therapy.
  - (a) Coordination of bone, tooth, and muscle development.
  - (b) Elimination of bad habits.
  - (c) Improvement of functional patterns.

If there is considerable horizontal maxillary growth, it seems possible, especially with the use of cervical or occipital forces, orthodontically to:

- Inhibit somewhat the forward path of the maxillary dental arch in correction of Class II arch relation.
- 2. Inhibit somewhat the forward path of the maxillary molars so as to attain an adequate arch length.
- 3. A combination of 1 and 2.

If there is a maxillary growth pattern in an equalized horizontal and vertical path, the same three combinations are possible, but not as readily successful.

If the maxillary growth pattern is mainly in a vertical direction, the three possibilities are not often successful and extensive tipping and extraction must be resorted to more frequently.

Vertical mandibular growth plays an important part in the correction of excessive overbite. As is well known, depressive forces are the most difficult to achieve. If there is not the vertical growth potential present to allow inhibiting forces and extrusion forces, the correction must be all of a depressive nature, and, consequently, slowly and difficultly attained, if at all.

Thus, a wise treatment plan and skillful appliance manipulation coordinated with favorable growth trends can and should result in a greater percentage of orthodontic successes.

#### CONCLUSIONS

- 1. The quality of orthodontic results, time required for treatment, and reaction to mechanical therapy are influenced by the following:
  - (a) The anteroposterior relation of the mandible to the maxilla.
  - (b) The increments of facial growth during orthodontic treatment.
- (c) The direction of growth of facial structures (maxilla and mandible) during orthodontic treatment.
- 2. It is possible by means of cephalometric radiography accurately to appraise the anteroposterior relation of the mandible to the maxilla.
- 3. The growth trends of facial structures can be appraised only generally by cephalometric radiography before orthodontic treatment.
- 4. At the present time, increments, detailed direction, and the time of growth cannot be anticipated in individual cases before orthodontic treatment.

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55 E. WASHINGTON ST.

# PROFESSIONAL BUSINESS MANAGEMENT

H. F. KEISTER, CHICAGO, ILL.

IN PROFESSIONAL management work, we admire and respect good public relations. In a relatively few years orthodontics has developed from a luxury to a necessity in the minds of the general public. So your public relations must be good.

There is little need to mention the tremendous amount of good your profession is doing, particularly in regard to your patients' better health and appearance affecting both their social and economic progress in life. This discussion will necessarily be general. It cannot deal with specific problems because no two of you are alike.

Security for the doctor is a big subject and time will not permit us to cover its various phases in detail. Some of my remarks on the business side of your practices may not be exactly flattering. For this I know you will forgive me.

All of you, at one time or another, have heard or read some of the statements I will make. Not enough of you have put them into effect. It has been said that doctors are not good businessmen. We are acquainted with many doctors who are excellent businessmen.

Your practice and your estate today are in jeopardy from social, political, financial, monetary, and even military influences over which you have only a remote control. Some of these pressures, however, can be alleviated through good management of the business side of your practice: (1) by planning against income taxes; (2) through the use of competent investment counsel in building your life estate; (3) a balanced insurance program tailored to your particular problem; (4) planning to reduce taxes on the estate income to a minimum during your lifetime to provide for retirement and to pass on to your heirs the residue with a minimum of death, inheritance, or estate taxes.

Most of you spend all of your available time and energy on your patients' dental welfare and too little or practically none on your own business problems. We have experienced the greatest social and economic upheaval in history in the past twenty years. How many of you have kept pace with these changes on the business side of your practice and in the handling of your estate problems?

Let us start out with the management of your office. I can emphasize the need for adequate records by quoting comparative figures on income taxes and the purchasing power of what you have left after taxes. The following figures are based on a doctor with his wife and two children for dependents. The years illustrated are 1939 and 1952.

1 (a) (b)

Read before the Central Section of the American Association of Orthodontists, Omaha, Neb., Oct. 13, 14, and 15, 1952.

If your 1939 net income before taxes was \$3,000, you would need \$6,000 today to have the same purchasing power. If your 1939 net income was \$5,000, you would need \$10,400 today to have the same purchasing power. If your 1939 net income was \$10,000, you would need \$22,500 today to have the same purchasing power. If your 1939 net income was \$25,000, you would need \$74,000 today to have the same purchasing power.

We can put this still another way. Suppose we trace \$1,000 of gross practice income for 1939 and compare it with 1952. For the purpose of calculating the income tax, we will take a doctor in the \$20,000 taxable income bracket, which is after all contributions and exemptions are taken off (Table I).

TABLE I

1939		1952		
Practice income	\$1,000,00	Practice income	\$1,000.00	
35% operating expense	350.00	41% operating expense	410.00	
Net .	650.00	Net	590.00	
Income tax, 15%	97.50	Income tax, 42 per cent on 1/2	247.80	
Take home pay	552.50	Take home pay	342.20	
Purchasing power 100 cents on dollar	552.50	Purchasing power 0.46 on dollar	157.41	

Hidden taxes amount to \$1,932 on a \$7,500 net income; hidden taxes amount to \$4,012 on a \$15,000 net income; 200 separate taxes on every car; 475 levies on a new house; 116 on a man's suit, all of which points to the need for more efficiency in the operation of your office and of course your need for more income.

A well-managed office must have adequate records, simple but complete enough to give you the story of your progress and to protect you against income tax inspections. The records needed for the business side of your practice consist of appointment book, day sheets to record individual payments, a practice record of income and miscellaneous production for the month, and your disbursement record of expense.

All incoming checks and cash payments should be deposited to your bank account. Payment of all expenses should be by check with the exception of petty cash items. Unless all income is deposited and all expenses paid by check, you will have difficulty in proving your honesty on a tax inspection. We have a general practitioner who became a client of ours in January of this year. He had a rather good bookkeeping system but failed in one respect—the reconciliation of cash.

We had difficulty in reconciling cash the first month and watched it very carefully for another thirty-day period. The net result was that the janitor in the building was found to have taken an average of \$20 a week from this practice over a period of time. The doctor was able to obtain the return of \$1,800 from the janitor. This \$1,800 was money on which he had paid a tax and had not even had the use of it. The tax pressure on employees is resulting in increased speculations. Unless your records are adequate, much income may be lost in this manner.

I have referred only to those records pertaining to the business side of your practice. On the professional side, inadequate histories, lack of recall or records pertaining to patients who are under observation but not ready for active treatment many times has resulted in practice value being reduced by as much as 50 per cent in the event of death or retirement of the doctor.

It is easy to establish a monthly control on accounts receivable through totaling the regular monthly services that you are rendering your patients, and in this way you will have the relationship between your production and your receipts in order to arrive at a collection ratio. Many offices, however, fail to use their day sheet in recording miscellaneous charges on broken or lost appliances, cephalometric fees, observation visits, etc. Unless these charges are entered on your day sheet so they can subsequently be posted to the patient's financial sheet or card, you may fail to bill the patient entirely, thus losing income here.

I cannot overemphasize the necessity for recording and reporting all income from practice and other sources for tax purposes; it is fraudulent not to do so. The Internal Revenue Department today has so many ways of checking both practice and outside income that it makes it virtually impossible to escape fraud or negligence penalties on inaccurate or poor records. On the other hand, most of the professional men fail to take all of the expense that they are entitled to on their tax return.

The policy of the Collector of Internal Revenue varies from district to district in what they will allow. However, in our area, we regularly use the following items that your inspector may consider controversial.

1. Auto and transportation expense, generally 50 per cent of the depreciation on your car plus the normal upkeep including gasoline and oil. These expenses can run slightly higher if you operate more than one office. Use a charge account and pay your auto expense by check. The inspector will always try to cut or eliminate the expense entirely if it is estimated.

2. Professional entertainment in your case is a perfectly legal expense. A specialist who is dependent upon reference from other doctors should have no difficulty in making this stick. Here again these bills must be paid by check. If the entertainment has been in the home rather than club, reimburse your household account and label the check accordingly. Entertainment in our area runs from 2 per cent to 5 per cent of the gross receipts in an orthodontic practice.

Professional entertainment and automobile expense seem to be the two items most professional men have difficulty with on a tax inspection. While it generally is not economic for one individual to appeal an adverse decision to a higher court, it would be our suggestion that your Association might back such a case. As individuals, you would all benefit from a clear-cut decision.

Many of our doctors find the extremely high tax rates today more palatable if they plan against their payment by setting up an escrow or savings account for this purpose. Deposits to the account are based on a percentage of your gross receipts. This is the most painless method we know of, particularly where your income may fluctuate from month to month.

The escrow account, which systematically removes funds from your checking account, may also be used for accumulating investment money. Talking about investments probably reminds some of you of the shirts you have lost in the stock market.

Most of you, during your lifetime, will have excellent earning capacity. Too few of you, however, will be able to build a life estate. Elmer Walzer, a financial writer for a Chicago paper, has this to say about the qualities required to handle investments: "The investor has need of the cunning of a fox, the watchfulness of a hawk, the agility of a cat, the courage of a lion and at times the ability to run like a greyhound."

Most investors err in attempting to get rich quick. It simply cannot be done. The old story that out of one hundred men in the stock market 97 lose money, two break even, and one gains, is just as true today as it ever was.

Before any investment program can be started, the doctor must maintain, in his business checking account, a minimum of one month's income after all bills are paid. A like amount should be carried in a savings account for his cash reserve in the event of emergency or illness. You are then ready to begin a systematic monthly method of building an estate. The reserves that I mentioned are absolutely necessary so that you are not placed in the position of having to liquidate your program at a point in the economic cycle that would be unfavorable to you.

Experience has shown us that nobody knows or can predict with any degree of accuracy the absolute peak or bottom in our business cycles, yet they do occur with a degree of regularity over a period of years that will enable you to come within one or two years of the peaks and valleys. We do not believe in gambling. Most of us do not have sufficient funds to play the market and very few have the skill required to do so.

Over the period of the past ten years or so, almost everybody was buying government bonds and building up savings accounts. The man who invested \$75 in a Government bond ten years ago today receives \$75 plus the \$25 interest, which in terms of purchasing power is worth only approximately \$50—in addition he pays the tax on the ten years of accumulated interest at the present rate.

So you see it has not only been a bad investment from the standpoint of income, but the man has actually lost half of this capital in terms of purchasing power. On the other hand, over the same period of time, \$75 invested in securities based on your market averages today would be worth approximately \$150.

In terms of purchasing power, it has the value of his initial investment so he has lost no capital and has an average yield of 5 per cent to 6 per cent over the ten-year period. If our cycle was on the downgrade, just the reverse would be true—your investment in the government bond would increase in terms of purchasing power and your investment in the securities would decrease in terms of purchasing power.

There is a method of overcoming the obstacles presented by these business cycles. It is called dollar averaging. You would employ the theory of dollar-cost averaging by buying stocks with an equal amount of money each month

over a long period of time. In this way more shares are acquired with the same number of dollars when prices are low and fewer shares are acquired with the same number of dollars when prices are high. This cannot be done through the buying of stocks in the open market unless your estate is extremely large.

Today we have what they call mutual funds or investment companies where you can invest a flat amount of \$50 per month or more. These funds are under government regulations. You enjoy the security offered by a wide diversification of issues held in the portfolio of your investment company.

The management in the better funds is excellent and far more capable of analyzing market trends than we are. Many of the funds are balanced; by that I mean a part of their portfolio consists of bonds and the balance in securities, thus protecting you against either a down or up cycle.

Investors who have been fortunate in building an estate have employed leverage factors to take advantage of cycles. The bulk of your program would be in securities during the rising cycle. Somewhere near the peak of this cycle they gradually convert their securities to dollar purchases such as government bonds, building and loan, savings accounts, and ride the cycle down. Dollars invested in this manner increase tremendously in terms of purchasing power. These dollars then are again reinvested in securities somewhere near the bottom of the cycle.

We have talked about the man who is starting a life estate program. Once your program has reached the point where you have accumulated \$35,000 to \$50,000, we would most certainly recommend that you place yourself in the hands of competent investment counsel. I am not referring to a brokerage house or any one connected in any way with the sale of securities. Your investment counselor should have no financial interest in what you buy or sell. His fee is based entirely on a flat percentage of the total amount of capital he is managing for you and you buy or sell at his suggestion through your own broker. The history of good investment counselors results in a much higher return to you on your capital both from the standpoint of appreciation and yield to you.

Without much question, a good investment counselor can give you a tremendous amount of security and, at the same time, far more income from your estate than you can in handling it yourself. The first requisite toward the building of an estate, however, is to have the funds available to do it with.

If the average man waits until he has several thousand dollars to invest, the odds are that he will never get around to it. So I again remind you that the most important factor here is the budgeting of your personal expenses or, if that is not practical, using an escrow account that automatically assures you having a regular amount of money available each month to put into such a plan even though the amount may be small. It is consistency and regularity that will pay off over the period of years.

The investment fund can bet set up in trust for your own retirement at a specific age or paid out to your family in a lump sum or provide them with a monthly income. To provide further security either for yourself or to protect

your family against premature death, we must consider the protection provided by a balanced insurance program.

Just as no two of you men practice exactly alike, neither are your personal problems or requirements for insurance identical, so we can cover it only in general. The average insurance policy is made up of two parts, one part is pure term or protection and the other part is a savings account that the insurance company maintains for you.

The number and age of the members of your family would depend upon the amount of coverage you would need. The average man requires a minimum of \$10,000 in protection for himself and \$10,000 for each member of his family. The bulk of protection is needed until his children are educated. Insurance policies consist briefly of the following types:

- 1. Pure term insurance in which you build no cash values but are paying for protection only. This type of policy has a very low premium but becomes rather expensive as you get older. It is usually referred to as temporary insurance.
- 2. A permanent type policy is sometimes referred to as whole life or ordinary life, which usually endows or matures at age 85 or later. Most of us pay premiums on this policy until we die. This policy, however, consists of a combination of term and a small savings account.
- 3. The insurance companies developed what they called a depression policy in the 1930's. It is referred to as family income plan. It consists of a combination of term and ordinary life insurance. The term portion is written for a family income period of twenty years. The ordinary life part of this policy becomes your permanent insurance at the end of twenty years while the term is discontinued. Most of these provide monthly payments to your family in the event of your death up to the maturity of the policy, which is usually twenty years. The longer you live the fewer years of payments your family or estate would receive.
- 4. The remaining types of policies usually fall in the endowment class. This policy endows or matures at the end of a specific period, usually twenty, twenty-five, thirty, or thirty-five years, for the face amount of your policy. The premiums are very high because you are building up a substantial savings account along with your insurance. In the event of your death, this policy will only pay its face value to your family or estate. The savings account that you have accumulated through the payment of high premiums is lost. You have to both live and die in order to beat this plan.

Many insurance men do an excellent job in analyzing a doctor's needs; however, like in everything else, there are some who oversell, resulting in our doctors' carrying either too much or the wrong type of insurance. A few of the insurance agents are primarily interested in selling an expensive policy on which they receive a high commission. This results in the man having too little protection and no funds available for an investment program.

Our recommendations for the younger man have generally been \$10,000 in permanent insurance such as whole life, plus the required amount of term. The

permanent insurance will be carried his whole lifetime. The balance of his protection program should be in term insurance renewable every five years without a physical examination by merely paying the premium.

As his children are educated, these policies are dropped. Such a program is inexpensive yet enables the man to have far more protection than he possibly could have with the endowment type policies and at the same time enables him to start the building of a life estate through the investment route.

There are special purpose insurance policies for the older man who is in a 50 or 60 per cent tax bracket. For example, a \$100,000 policy can be purchased by borrowing against that policy without it costing you one dime to carry it; in fact, you can have a profit on the policy of around 6 per cent, along with the protection. Today's social planners, through our high tax rates both on income inheritance and death taxes, make it most difficult to accumulate money and virtually impossible to pass it on to our heirs without adequate planning.

Among you there are probably some who do not have a will. Probably your wife has no will. Many of you own your homes; most likely the title is held jointly by you and your wife. If any of you fall within those two classifications you have a problem that should be corrected. Fifteen years ago it was considered good practice to have the title to your home held jointly by you and your wife. Today's tax laws outmode this procedure.

The laws vary from state to state. However, in most of them if you die intestate, that is, without a will, the court will distribute your estate and your wife may get as little as one-third of what you leave. While she tries to eke out a living from this, the part apportioned to your minor children may be held in guardianship, along with most of its income. Your cousin or other relatives may get a fat slice of your estate. An irresponsible brother who does not know how to handle money may be appointed the administrator.

Select your lawyer with the same care you would your physician; not all of them are specialists. Going to the average lawyer for specialized advice on inheritance, death, and estate taxes would be like my sending my daughter to a general practitioner for orthodontic treatment. Many times we have suggested to our doctors that they consult with their attorney in regard to a will and too often their attorney, after discovering that the property was held jointly, has indicated that there was no need for a will. Your attorney should be a specialist in inheritance, death, and estate taxes.

Some attorneys may draw a will free of charge, or charge a nominal fee of \$5. This can be the most costly mistake you can possibly make because they, in later years, generally retire on the fees they receive from your estate. Most capable attorneys handling inheritance, death, and estate taxes charge in the neighborhood of \$30 per hour, but they have no financial interest in your estate once it is set up, and in many cases your savings can run into thousands of dollars.

Proper planning during your lifetime can result in the saving of many tax dollars. Some of you men may own a professional building that your office is located in. We have a doctor at the present time whose annual tax bill is being

reduced from \$6,000 a year to approximately \$4,000 annually by setting the building up in trust. Only a man thoroughly versed in inheritance, death, and estate taxes can accomplish these savings for you.

A reasonable degree of security can still be had today by the doctor. We must draw certain conclusions, however, based on the past years of experience.

A greater portion of your time has to be spent on the business side of your practice and estate planning, rather than all of it on your patients' welfare.

Give more time to the management of your office. Good records and an efficient system will save many charges that are otherwise lost. Income taxes will be with us for many years. Plan against them and then take all of the deductions you are entitled to.

Insist upon a budget for your personal expense, or use an escrow account, maintained by a percentage of each deposit you make to your bank account.

The regularity of monthly additions to your savings program will, in most cases, determine the eventual size of your estate. Money invested at 6 per cent, compounded semiannually, will double itself in ten and a fraction years. Select your investment counselor with care and then follow his advice.

Use your attorney and insurance man as a team to determine your requirements for insurance and estate planning. It can be a serious mistake to delay this vital part of your program any longer.

59 E. MADISON ST.

# A STUDY OF THE MANDIBULAR THIRD MOLAR AREA

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THIS study was undertaken with the idea of attempting to east some light on the third molar problem for the orthodontist.

The third molar has been a frequent topic for discussion among general dentists and oral surgeons as well as among orthodontists.

From the orthodontist's point of view the third molar has long been considered a menace to his finished result, and more times than not has been removed as a routine practice without a considered diagnosis.

If the third molar were not removed and a relapse occurred after treatment, this tooth was immediately accused of this failure.

Recently the third molar has come into prominence because of the wide practice of extraction of premolars. It has been argued by Tweed and others that by the extraction of premolars the lateral arch segments move forward in treatment and thus allow more space for the eruption of the third molar.

If extraction of premolars is not the treatment of choice, then what is the prognosis for the third molars? Should they be removed early as some men advocate? At 12 to 14 years of age could it be determined whether a third molar would be a good and functioning tooth at 18 to 22 years of age?

If it could be determined more accurately, at an early age, or even after orthodontic treatment was completed, that the third molars would or could be expected to erupt, then orthodontic treatment and prognosis could progress on a more positive basis, and the orthodontist would not have to concern himself with checkups on the patient until the age of 20 to 22.

In mild discrepancy cases where the tooth structure is in slight excess in relation to bone, but extraction of teeth is not indicated, it would be well to know how much space is available for the third molar.

As these questions came to mind, interest was aroused to study the molar area, hoping for a clue or a lead to the answers, and perhaps a clearer picture of this problem. However, before a study could be undertaken, a background of some of the previous work done on this subject was necessary.

Scientific investigation pertaining to the growth of the head and jaws did not start until the eighteenth century.

In 1771 Hunter undertook the study of the mandible. He used the pig and employed madder feeding to show where growth was occurring. His findings have withstood the attacks of numerous investigators. He pointed out that the second deciduous molars, and then in succession the first, second, and

This thesis, which was given as a partial fulfillment of the requirements for certification, by the American Board of Orthodontics is being published with the consent and the recommendation of the Board, but it should be understood it does not necessarily represent nor express the opinion of the Board.

third permanent molars, seemed to erupt in the same relation to the mandibular ramus. Also, that resorption of bone must be as characteristic of growth as deposition, or bones would become too massive and heavy for management. The height of the mandible was gained principally by growth at the alveolar crest. Finally, Hunter pointed out that the increase in length of the mandible was provided by a deposit at the posterior border of the ramus, while the anterior border was being resorbed to maintain proportions.

Hunter's contentions seemed so bizarre that Humphrey in 1864 sought to check his findings. Using the same animal (the pig) that Hunter had used, Humphrey drilled holes in the ramus and inserted two wire rings, one encircled the anterior border of the ramus, the other the posterior border. At a later date the animal was sacrificed and he found that the ring in the posterior border was thoroughly imbedded, while the ring in the anterior border had sloughed off into the soft tissue. Thus Hunter's contention was confirmed. The anterior border of the ramus resorbed, while deposition of bone occurred on the posterior border.

Brash later confirmed the work by Hunter on the growth of the face of the pig by vital staining.

Brodie has this to say about vital staining:

The madder and alizarine methods have proved conclusively that the greatest increment of anterior-posterior growth is at the posterior border of the ramus. Since this type of growth would add to the length of the mandible and to the posterior width of the ramus absorption trims back the anterior border only slightly less rapidly than deposition is occurring behind. In this manner the molars make their appearance first in the ramus and are slowly uncovered by the retreat of its anterior margin, without having to migrate at all. The growth upwards of the alveolar bone keeps bone around the tooth.

These authors have shown where growth occurs in the mandible, but not at what age.

It is generally accepted that the lower third molar has the highest incidence of impaction. Blum in 1923 published an analysis giving the malposition of various teeth in percentages. Out of 267 cases of various types of impaction in the mandible, 231, or 86 per cent, were impacted third molars.

In a study of 261 males and 172 females, Hellman found that twice as many females had impacted teeth as the males, and the lower third molar was the most frequently impacted. He attributed this to the smaller mandible in the female not providing sufficient space for the eruption of the third molar, although he does not consider this the only factor involved in the eruption of this tooth. He also found that the average age of those that did erupt the lower third molars was  $20\frac{1}{2}$  years for males and females. Hellman has this to say about the eruption of the lower third molar, "The position or tilt of the third molar changes with age, becoming either vertical or horizontal, both of which may lead to impaction or eruption."

Both Hellman and Sicher agree that the third molars are rudimentary and vary greatly in size and shape. Also, that due to evolution tendencies the shortening of the mandible is more advanced than the shortening of the dentition, and therefore the frequent impaction of the third molar is more readily understood. It is further noted that this reduction of space for the third molars is enhanced in many individuals by the fact that general growth and that of the jaws are nearly complete by the time the third molars erupt. It would seem then that the area into which the third molar is to erupt, or the retromolar area, becomes of vital importance. The amount of space available from the distal of the second molar to the anterior border of the ramus takes on greater importance and would have to be as large as the erupting third molar for this tooth to come into the arch normally. A lack of space would certainly result in its impaction. This does not mean that if sufficient space is present the normal eruption of the third molar should always be expected. There are other factors involved in the eruption of this tooth which this paper will not discuss. However, some of these might be mentioned:

- 1. Development of the root and dental development of the patient.
- 2. Position of molar in relation to mandibular bone and to the second molar.
- 3. Developmental movement of the crown.
- 4. Reaction of surrounding tissues to this development.

If all of the foregoing requirements could be fulfilled, sufficient space would still have to be present before a normal eruption of the third molar could be expected.

Sicher has this to say about the eruption of the lower third molar:

The lower third molar faces upward and forward during its development. If insufficient space is provided for its pre-eruptive rotation and it starts to erupt in the direction of its abnormally inclined long axies, its crown moves toward the crown or root of the second molar and is, sooner or later, arrested in its movement.

## METHODS AND MATERIAL

With the work of the foregoing men in mind, a study was undertaken of the retromolar area. The material used was lateral jaw roentgenographs taken from the patient files of Dr. Ernest Johnson. Dr. Johnson had been having lateral jaw plates taken of each of his patients before treatment, during treatment, and one or two x-rays during the retention period, for the past twenty-five years.

Because a serial study was not being undertaken, it was not thought entirely necessary that cephalometric head films be used. Also, because of the superpositioning of the rami of the mandibles in cephalometric head films, it is difficult to get a clear-cut picture of the anterior border of the ramus, which was important in this study.

This study, then, was conducted on orthodontic patients only, and therefore the data and material compiled cannot apply to the population generally. This sample selected exclusively from orthodontic patients should have more meaning to the orthodontists than one which could be considered truly representative of the population at large.

These x-rays were all taken in the same x-ray laboratory and the same routine was used on each patient. The patient's jaw was held at an angle

against a headrest, on which the cassette was placed, and the x-ray was directed at a right angle to the side of the jaw that was being x-rayed, the right side of the jaw being taken from the left side and the left lateral jaw from the right side.

The x-rays were taken at 86 kv. at 20 Ma. for two and one-half to five seconds. X-rays were not used where elongation or foreshortening was noticeable in the molar area. Tracings were made with particular reference to the molar area of 375 right and left lateral jaw plates in the five by seven inch size.

A line was drawn on the tracings to represent the occlusal plane. This line was extended to the posterior border of the ramus. A perpendicular line was dropped from the occlusal plane passing through the height of contour on the distal of the lower first molar, as shown in Fig. 1.

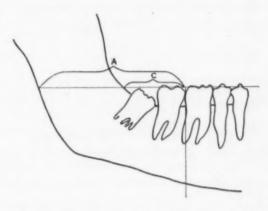


Fig. 1.-Figure of lateral jaw showing measurements A and C.

Measurements were made on the occlusal plane from the point where the perpendicular intersected it to the anterior border and also to the posterior border of the ramus. The measurement from the distal of the lower first molar to the posterior border of the ramus was made to determine, if possible, a trend in anterior-posterior growth in the width of the ramus of the mandible. The lower first molar was used as a point from which to measure because it bears a very stable relation to the mandible. Elman has this to say about the lower 6-year molar, "The lower six year molar is strikingly constant in its relation to the mandible. Regardless of age, the distance from this tooth to the posterior border of the ramus and to the lower border of the body always yields a 3 to 2 ratio."

A masterscattergram was made from the measurements comparing the age of the patient with growth, which is recorded in millimeters, as shown in Fig. 2. Not all tracings were recorded on this graph because the ages of all patients were not obtainable. Of the group traced 320 were used in the scattergram.

Although this scattergram shows a definite trend, it was thought advisable to level this off by plotting the average measurements for each age on an age-growth chart, and this was done, as shown in Fig. 3. It should be pointed out that any study where averages or means are used, as this one does, the value of

it can be accepted only as indicating general trends and tendencies. Fig. 3 shows a definite trend and a gradual increase up to the fourteenth year, and a leveling of the curve after that age.

This would indicate that very little growth occurs in the area between the lower first molar and the anterior border of the ramus after the fourteenth year.

In checking the averages (as shown in Table I), from the sixteenth year up to the twentieth year, there is some apparent fluctuation in attaining a constant figure between the averages for each year, even though it is apparent that a definite leveling off has occurred. This would indicate that the variables that accompany any work of this kind have come into play. Therefore an average of these averages might be of more significance. This figure was found to be 21.0 mm.

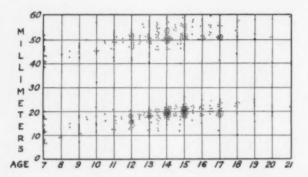


Fig. 2.—Age-growth scattergram showing measurements A in upper and C in lower grouping.

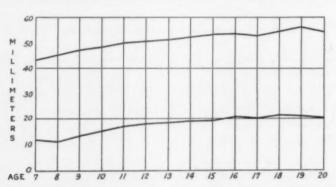


Fig. 3.—Top line is the distance from the distal of the lower first molar to the posterior border of the ramus. Bottom line is the distance from the distal of the lower first molar to the anterior border of the ramus.

If it is assumed that sufficient space has to be present before the normal eruption of the lower third molar can take place, then these figures could give the orthodontist a more definite basis on which to form the prognosis for this tooth.

If sufficient space for the mesiodistal diameter of the crown of the third molar is not present, then steps could be taken for the early removal of this tooth.

To determine this available space a measurement could be taken, as described previously, on a lateral jaw plate. To the distance from the distal of

TABLE I. COMPARISON OF MEASUREMENTS OF MOLAR AREA

AGE	A	NUMBER OF SERIES FOR A	c	NUMBER OF SERIES FOR C	DIFFERENCE BE- TWEEN A AND C MEASUREMENTS
7	42.5	13	11.8	14	30.7
8	44.3	3	11.0	4	33.3
9	46.3	8	13.2	12	33.1
10	46.5	8	13.9	9	32.6
11	48.0	17	16.0	20	32.0
12	48.5	39	16.5	41	32.0
13	49.7	42	17.0	43	32.7
14	50.9	58	18.7	63	32.2
15	52.4	58	19.0	56	33.4
16	53.3	26	20.9	28	32.4
17	51.7	29	20.0	30	31.7
18	53.7	9	21.7	9	32.0
19	54.9	5	21.6	5	33.3
20	53.5	3	20.8	4	32.7

A is the average distance in millimeters from the distal of the lower first molar to the posterior border of the ramus.

C is the average distance in millimeters from the distal of the lower first molar to the anterior border of the ramus.

the lower first molar to the anterior border of the ramus would be added the difference between that number and 21 mm., or the average possible growth of the retromolar area. This would give the amount of available bone structure or space into which this tooth has to erupt.

A measurement of the mesiodistal diameters of the crown of the second and third molars (the third molar could be measured in an x-ray) would determine the amount of tooth structure present. A comparison of the amount of tooth structure with the space available would show, in millimeters, if sufficient space is present for the eruption of the third molar.

This could be done at any age that an accurate x-ray of the third molar could be taken and after the formation of the crown of this tooth.

In premolar extraction cases, where the amount of mesial drift of the lateral arch segments is from 2 to 4 mm., depending on the amount required in the case, this mesial drift could be added to the space available in the retromolar area. A comparison of this amount with the size of the crown of the third molar would again give a more accurate prognosis for this tooth.

Treatment planning at 12 years of age could then include a study of the third molar with an indication of what the possibilities are for this tooth.

A decision of whether to remove this tooth or not could wait until active treatment was completed, at which time another appraisal of the retromolar area could be made.

It is interesting to note in Fig. 3 that as the two measurements A and C show increases, or a resorption of the anterior border of the ramus and a deposition of bone at the posterior border, there is a parallelism of these two lines. This would indicate that deposition and resorption follow at the same rate.

In checking the differences between A and C measurements, which would give the average width of the ramus, as shown in Table I, there was very little variation over all after 8 years of age, and there is no indication of a trend from one age group to the next. This would indicate that the width of the ramus is attained at an earlier age than formerly believed, and maintains this as growth continues.

A comparison of the averages in Table I reveals that tremendous growth occurs between 8 and 14 years of age, and very little growth occurs after that age. Seven and seven-tenths millimeters of growth occurs between the distal of the first molar to the anterior border of the ramus, or the C measurement, between the eighth and the fourteenth year, while 2.3 mm. growth takes place from the fourteenth year to a point where a leveling off occurs, or from the sixteenth to the twentieth year. The average for these ages was 21.0 mm.

In the A measurement from the age of 8 years to 14 years there is a growth of 6.6 mm. as compared with 2.5 mm. growth from 14 to a point where a leveling off occurs, or from 16 to 20 years. The average for this age group was 53.4. This compared with the distance at fourteen or 50.9 mm. gives a growth of 2.5 mm.

This comparison shows, as does Fig. 3, that most of the growth in the retromolar area and on the posterior border of the mandible occurs before the fourteenth year.

In order to determine the amount of error of the x-rays used, measurements were made on tracings of the second molar on twenty-five patients who had three or four x-rays in a series of both right and left lateral jaws. The measurements of the second molar were compared in each series, and the degree of error between each series was compared.

A statistical analysis was made of the measurements, and the results are as follows:

- 1. The probable error of any one measurement is 0.2 mm. This means that any one measurement may be expressed as its value plus or minus 0.2, e.g., 8.2  $\pm$  0.2.
  - 2. The probable error of the mean of any of the groups measured is 0.1 mm.

This probable error is between x-rays and not between x-rays and patient. This error, however, seems of minor importance.

### SUMMARY

A study of the retromolar area was undertaken.

Hunter, Humphrey, and Brash have shown, in the pig, that the anterior border of the ramus resorbs and that bone is deposited on the posterior border. Brodie agrees that the greatest anterior-posterior growth is at the posterior border of the ramus.

In this study 375 tracings were made of both right and left lateral jaw x-rays. These x-rays were taken of orthodontic patients only.

Measurements were made on the tracings from the distal of the lower first molar on the occlusal plane to the anterior border and posterior border of the ramus. Three hundred and twenty of these measurements were placed on a scattergram. This scattergram showed a definite clumping of both measurements.

In order to smooth these curves, an average of the two measurements was taken for each age group. This was plotted on an age-growth chart.

Some interesting points showed on this chart.

- 1. The curves level off after 14 years of age, and show very little growth after that.
  - 2. The two curves show a definite parallelism.

A method of appraisal of the third molar area was shown as possible prognosis for this third molar at the start and finish of orthodontic treatment.

The average measurements for each year were placed in a table and a comparison of these reveals:

- 1. The amount of growth from the lower first molar to the anterior border of the ramus from 8 years to 14 years was 7.7 mm. The growth from 14 years to an average of the ages from 16 to 20 years was 2.3 mm.
- 2. The growth from the lower first molar to the posterior border of the ramus was 6.6 mm. from 8 to 14 years, while 2.5 mm. growth occurred after that.
- 3. The difference between A and C measurements for the various age groups remained fairly constant.

#### CONCLUSIONS

In this study an attempt has been made to throw some light on the problem of the mandibular third molar.

Although averages in a study of this kind are permitted only to show tendencies and trends, these averages might still be applied to the individual patient, and give the orthodontist a more definite idea as to the possible growth in the retromolar area of the particular patient.

Certainly at the age of 15 to 16 years, when further growth in the retromolar area is negligible, a comparison of tooth and bone structure would determine if sufficient space was present for the third molar.

There are other factors involved in the normal eruption of the third molar. However, if sufficient space is not present the eruption of this tooth cannot be expected.

I would like to thank Drs. Ernest Johnson and Wendell Wylie for their generous help in this study.

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950 THE ALAMEDA.

#### ANGLE CLASS II, DIVISION 1 MALOCCLUSION

#### REPORT OF A CASE

WILLIAM F. FORD, D.D.S., M.S.D., WINNETKA, ILL.

THIS is a case report of a male patient 12 years of age. A diagnosis of Angle Class II, Division 1 malocclusion was made. An inspection of the plaster casts before treatment (Fig. 1) revealed that besides the bilateral arch malrelationship, the general arch form of the lower denture was fairly good. The upper central incisors were quite protrusive. The upper left second deciduous molar was present and the upper cuspids were partially erupted. The interocclusal space measured 4 mm.

Upon the basis of the relationship of the dental arches to the face and cranium there was a pronounced protrusion of the maxillary dental arch and a slight retrusion of the mandibular dental arch, both functional and structural. Λ cephalometric analysis confirms this observation (Fig. 2). The facial photographs demonstrate the characteristics of a typical mouth breather (Fig. 3).

History and General Clinical Picture.—The patient, a normal child, had had the regular childhood diseases including some allergies and hay fever. Caries susceptibility was average. Tonsils and adenoids had been removed. An older brother had undergone orthodontic treatment for a similar malocelusion.

Etiology: Hereditary.

Objectives of treatment: 1. To obtain the achievable optimum in facial balance and harmony.

- 2. To obtain the achievable optimum in occlusion and dental esthetics.
- 3. To obtain the maximum probability for a stable result.

Method of Treatment.—The upper four anterior teeth were banded with Johnson bands and bands were placed on all 6-year molars with the buccal tubes soldered in such a way that when the twin arch wire was inserted into the tubes it would assume the position of a desirable arch for this particular individual. Caps were inserted on the upper four anterior bands to lock the twin arch into position, except for the right lateral incisor, which was ligated with steel ligature. A lower twin arch wire was inserted to the lower six anterior teeth.

After several appointments when the upper anterior segment had a desirable arch form, a twin arch wire with hooks was inserted and Class II elastics started.

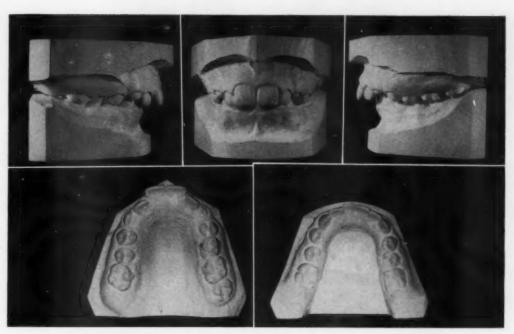


Fig. 1.-Study models before treatment.

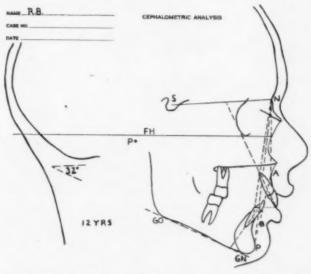


Fig. 2.—Tracing of oriented lateral cephalometric roentgenogram before treatment.



Fig. 3.—Frontal view before treatment (left) demonstrating a typical mouth breather and (right) the resultant effects of a normal balanced occlusion on the facial musculature.

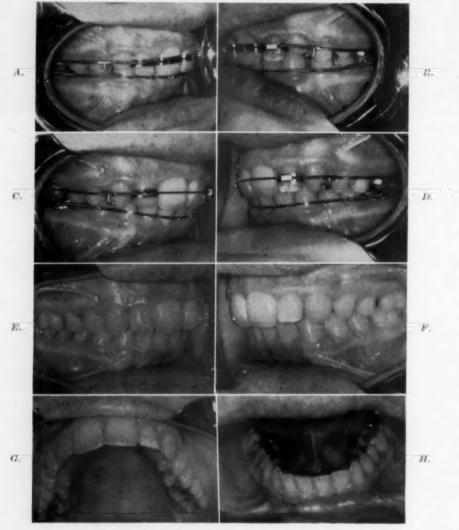


Fig. 4.—A and B, Four months after treatment started; C and D, just before appliances were removed; E, F, G, and H, fifteen months after all appliances were removed.

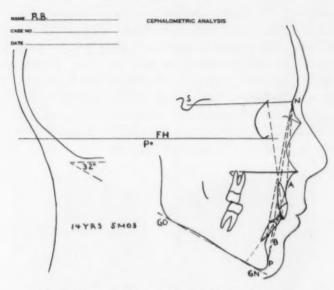


Fig. 5.—Tracing of oriented lateral cephalometric roentgenograms before and after treatment.

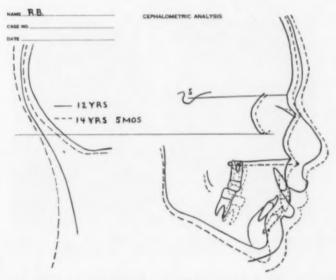


Fig. 6.—Superimposed tracings of the lateral cephalometric roentgenograms before and after treatment. (S registered.)

After four months the protrusion was reduced but the buccal segments were not occluding satisfactorily (Fig. 4). At this time posterior coil springs, 0.009 inch and cut \% inch long, were inserted on the end section of the upper arch wire to lengthen the upper arch and move the upper buccal segments distally. The spaces in the lower arch were closed with a pull coil type of spring.

The molar relationship was satisfactory after twelve months of treatment but the premolars had not settled in as yet. In order to maintain the desired molar relationship until the premolars settled in and the buccal segments were interdigitating satisfactorily, the end sections were stopped in front of the upper buccal tubes and intermaxillary elastics were continued for only eight hours a day. All appliances were removed twelve months later or twenty-four months from the beginning of treatment (Fig. 4).



Fig. 7.—Profile and frontal views before treatment (above) and after treatment (below).

Note development of upper lip after teeth were retracted.

Retainers were worn at night only. Head x-rays were taken five months after the appliances were removed and a tracing made (Fig. 5).

The tracings before and after treatment (Fig. 6) were superimposed and served as an interesting illustration of how nature plays such an important role in this type of case, if we properly synchronize treatment with development. The tracing indicates that the upper molars were restrained in the proc-

TABLE I. PLANES AND LANDMARKS IN THE BEFORE AND AFTER TRACINGS OF THE SKELETAL AND DENTURE ANALYSIS

	CEPHALOME	TRIC ANAI	YSIS*			
PLANES AND LAN IN SKELETAL A		MEAN (CHIL- DREN)	STAND- ARD DE- VIATION	PATIENT R, B.		
Relative anteroposterior position of maxilla	or S-N-A	80.79°	3.85°	87.2°		
Relative anteroposterior position of mandible	or S-N-B	78,02°	3.06°	77.5°		
Relative anteroposterior	Difference of or S-N-A	-	-	9.7°		
position of maxilla to mandible  Angle formed by man- dibular plane and the constant sella-nasion plane	to S-N-B or NS-GoGn	32.27°	4.67°	32.0°		
Angle of convexity	or N-A-P	4.22° -0.0	5.38° 5.09°	+13.5°		
DENTURE ANALYSIS				BEFORE TREAT- MENT	AFTER TREAT- MENT	CHANGE
Axial inclination of upper central incisors to nasion-sella	or   1 -N8	103.54°	5.02°	113.5°	96.6°	16.9°
Axial inclination of upper central incisors to lower central incisors	or   1 -   1	130.40°	7.34°	125.0°	135.5°	10.5°
Axial inclination of lower incisors to mandibular plane	or 1 - GoGn	93.52°	5.78°	99.5°	96.5°	3.0°
Relationship of upper central incisors to line drawn from nasion to pogonion (measured in mm, from incisor edge)	or   1-NP (mm.)	6.35 mm.	2.67 mm.	13 mm.	6 mm.	7 mm.

<sup>\*</sup>From Downs and Riedel.

ess while at the same time the other facial components grew downward and forward. If this case presented for treatment several years later, no doubt two upper first premolars would likely have had to be extracted in order to reduce the protrusion properly.

Facial photographs (Fig. 7) after treatment demonstrate satisfactory balance and harmony.

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#### BRITISH HEALTH PROGRAM

CECIL G. MULLER, D.D.S., OMAHA, NEB.

A FTER years of reading of and listening to reports of England's National Health Program, it was with purpose aforethought that I took my little notebook and pencil into the heart of London. I wanted to see for myself the result of the program and the reactions of the peoples that were part of it. Since this reportorial work was a new art to me, I was at somewhat of a loss as to how to ply this strange trade. However, I set out in London, in Stratfordon-Avon, Henley-on-Thames, Oxford, and Newhaven, to act as little like the American version of the reporter as I could. Fortunately this was a happy choice. Those who were initially reluctant to talk to me were most cooperative when they found out I was neither a newspaperman nor an agent of the government.

I had no set of rules to guide me in my quest but I determined to draw my interviews from as many classes of people as possible and to achieve a balance in the various trades and occupations of those interviewed. In the back of my mind were the many things I had read about the English experiment.

For a number of years Britain has had a system whereby employees in the lower income brackets could receive limited medical and dental benefits. These benefits were administered for the government by private insurance companies called "approved societies." After this system had been in effect five years and a surplus had been accumulated, additional benefits were scheduled and these included new dental grants. Recipients of the benefits were entitled to 50 per cent of the cost of dental service. Approximately thirteen million employees were covered by this program but the benefits did not extend to their dependents. Many of England's leading dentists and physicians engaged in this program.

The present plan, known as the National Health Insurance Act, went into effect in 1948. Its purpose was to provide free advice or care for medical and dental problems that might be troubling any man, woman, or child anywhere in the length and breadth of England. I almost said "Merrie Old England," but can now hardly reconcile this optimistic statement with my experiences in the country.

No English dentist is compelled to enter the program but only about 10 per cent remain in private practice today. They are subject to continual pressure from their patients who are deserting the private practitioner in favor of "the plan." The reason is, in practically every case, the greatly reduced cost of the National Health Service.

The dentist who wishes to become part of the program must make application to the executive council in the area in which he practices. He may have his name withdrawn by giving three months' notice to this same council. Once in the program the dentist's duties range anywhere from advice on the cleaning of teeth to full-mouth extraction. His patients may include

local citizens, persons from outside the immediate area, and visitors from abroad who happen to be in need of immediate dental care.

The patient selects a dentist by consulting the list to be found in his local post office. He then goes to the dentist and asks to be accepted. The dentist has the right to refuse any patient but if he accepts him he must make out a special government form in the patient's name. The patient countersigns the form and is given as a receipt the detachable section of the form which is his guarantee of service from the dentist. The dentist is paid for his work according to a fixed scale for the various operations he may perform. This differs from the treatment accorded physicians who are paid according to the number of patients they treat and the individual care given them.



Fig. 1.—Interviewing a government employee at Trafalgar Square.

Any discussion of how the British people fare under such a system should be prefaced with the remark that these people have little to compare the present plan with. Never have the British people enjoyed the dental care that is the privilege of the average American. Their incomes, their scale of living, and their diet have been such that they would visit the dentist only when in the most severe pain. A missing front tooth was usually not replaced because there was no social stigma attached to the person who was the possessor of the subtracted smile. To most of them today, they never had it so good. But this good they are so happy with is far from good when looked at objectively.

This was the case I carried to the people of Britain and in my journalistic, scientific, and Gallup-like activities I spoke to dozens of teachers, businessmen, hotel personnel, pub keepers, taxi drivers, restaurant owners, clerks, housewives, military personnel, artists, government employees, and dentists.

Some of my random interviews attracted responses such as the following:

Government employee: "I wanted to have a tooth placed on a denture [cost about \$2.50] but the dentist put pressure on me to sign a slip where he would get paid for a whole upper denture [cost about \$28.00]."

Artist: "It's a fine idea. People making from six to eight pounds a week can now have dental care they could never have afforded previously. The long wait for appointments is tiresome however."

Restaurant owner: "It lacks individual attention. Just like mass production."

Maid in hotel: "I've been paying four shillings a week for this service since it started and I haven't used it once yet."

Waiter: "It's no good. Once I had a terrible pain in my tooth and I had to wait two hours with 40 other people before the dentist could see me. This wouldn't have happened before the program came in."

Cook: "I spend most of my time in waiting rooms."

Australian visitor: "It's a pleasant surprise. The dentist took care of me and didn't charge me a shilling."

Clerk in stationery store: "I had a tooth that was driving me crazy, but when I went to the dentist he told me he couldn't see me for six weeks. When I told him I couldn't stand the pain that long he offered to do it right away 'outside the program.' This costs me 3 pounds [about \$9.00] which was much more than I could afford but I had no choice."

Clerk in jewelry store: "I went to the same dentist for years and liked him very much. Now he's under the program and his work lacks the enthusiasm and pride he once demonstrated."

With all of these admitted drawbacks, what keeps the program going and what keeps the public support of it? Perhaps a brief study of the financial history of a London bank clerk will explain this. Our clerk owns a six-room house in a middle-class London suburb. He has a wife and two small children. His experience with the bank extends back nineteen years except for the wartime interruption and for this long service our 44-year-old clerk is rewarded with an annual salary of about 800 pounds (\$2,240) per year. This represents about half the salary a man in his position would make in the United States. Before the war 800 pounds was a nice income in England. A man could eat meat every day, buy the clothes his family needed, take a vacation in Venice, and even save a little for the inevitable rainy day.

Last year, however, our friend's income tax came to 91 pounds, local tax 26 pounds, and his annual installment on his home mortgage was 50 pounds. Gas, heat, and light cost him 28 pounds, his bus fares amounted to 30 pounds, and his lunches, frequently unpalatable, took another 40 pounds from his income. After his food and clothing bills are subtracted from the remainder he is fortunate to have 50 pounds left. This will not purchase any vacation in Venice. The family gets enough to eat but their diet would be somewhat disheartening to the American appetite. Meat, butter, margarine, cooking fat, sugar, candy, tea, domestic cheeses, and eggs are still on the ration list. Chicken has been removed from the list but they cost the consumer \$4.20 each. Fish are

not rationed and they comprise a large part of the English diet even to becoming fairly acceptable as a standard breakfast item.

Many Englishmen are worrying about this forced diet and its inadequacies were blamed for the poor showing made by the English athletes in the recent Olympics. Nevertheless, the diet, the taxes, the low incomes, and all that go with them are here to stay for some time and the English have to live with them. Is it any wonder, then, that they embrace a program where attention is available to many who have never had it and available to others at prices that cause no great strain on their purse? It is fine to talk of ideals and perfection but a man has a difficult time convincing a lax subject with scarcely a jingle in his pockets. This is the patient's situation. How do the dentists themselves feel about it?

Here we have to make another distinction. Until 1921 anyone could practice dentistry in England whether he was qualified or not. Any type of billboard or newspaper advertising was legal and dental offices bore such pretentious titles as "American Dental Specialists" and "Dental Surgical Parlors." The Act of 1921 limited practitioners to academically qualified individuals, registered medical personnel, and those who had been in practice five years prior to the act or who successfully passed a special examination. The unfortunate thing, however, was that this act did not prevent any qualified dentist from declaring that he was an exodontist or an orthodontist and thus save him the necessity of any special training. This permits him to work under the program as a specialist.

At present about 4,000 of Britain's 12,000 practicing dentists qualify under the Act of 1921. Small wonder then that the average Englishman's respect for a dentist is far below that he accords his physician. Many of the dentists deserve even less respect than they receive and they, of course, are happy to operate under the cloak of the program. Not all feel this way, however.

One orthodontist told me that in spite of the number of patients he has under the plan, he does not like it. "I was forced into the plan," he said, "in order to make any kind of a living. It's like some of your laws in the States. You don't like them but you have to live with them." The most discouraging thing to him is the fact that many families who previously took good care of their teeth under a private dentist now try to maintain their high standard of living by conserving on dental care and shoving their children in under the program.

Another dentist told me of visiting an office where two orthodontists saw one hundred patients in an hour. All of the patients were wearing removable appliances and most of the techniques were done by nurses and laboratory technicians.

A German I met at the London airport, a Prussian type with the dueling scar to prove it, summed up the situation in these anglicized words, "The British Health System is crazy," he said. "It is like their sausage which looks good and smells good, especially when you're hungry, but once you bite into it you find you have been deceived. It's mostly dust and filler." In a tone so condescending that it bordered on sarcasm, he told me that he "always takes some butter and meat to his poor friends in Britain."

Not so flippant in its tone but just as much to the point is the following excerpt from a paper delivered this year at the International Dental Congress in London by Dr. Harold Hillenbrand of Chicago.

"In four years of existence, the program has departed materially from the original concept of free dental service for all. It has provided additional treatment to the public but, in so doing, it has utilized available dental resources in terminal treatment of adults rather than preventive treatment in the younger age groups. It has twisted the concept of governmental responsibility for the costs of dental care by imposing increasingly heavy burdens on the members of the dental profession in order to carry out unrealistic governmental objectives. It has not produced the increased facilities for reconciling professional resources with public need and demand. It has created through its own ineptness a real threat of diluting the dental profession and thus lowering the existing standards of service to the public. It has not employed effectively the great weapons for the prevention and control of dental diseases implicit in intensive research. It has made no real effort to teach the public that dental health is an essential objective for everyone regardless of whether or not a beneficent government provides it without charge. It has weakened the dental profession as a valuable instrument for social good by publicly placing on the dental profession blame which it could not prevent and which it did not deserve."

Dr. Hillenbrand went on to say: "The experiment has a lesson for dentistry everywhere in the world; even though there is human need it can be met only through existing resources; if the future dental health of a nation is the real objective, it must be sought through the prevention, control and treatment of dental diseases in the younger age groups even though this reduces the attention that can be given to the terminal treatment of adults; dental health education and dental research must be basic elements of any successful program; the dental profession itself must strengthen its internal resources in order to meet both the fair and the unfair challenges which are made by our changing and modern society."

Even on the plane ride from London to New York, I had a subject for my investigation. One of my companions, an English Jew, upon learning that I was a dentist, proceeded to tell me of his heart trouble and to demonstrate the ill-fitting dentures with which the health plan had seen fit to ornament his mouth. He was on his way to New Jersey and intended to become an American citizen. The sight of the Statue of Liberty so visibly touched him that I again called to mind those many joys we possess as part of our heritage which are so noticeably absent abroad. Not the least of these is proper care of every health condition.

"Yes," I thought, "it does one good to see how the other half of the world lives. Makes you appreciate your own surroundings." I smiled comfortably at the thought.

Beside me, my friend, lost in his own thoughts, also smiled. His dentures hung loosely over the curved lower lip.

1516 MEDICAL ARTS BLDG.

## Department of Orthodontic Abstracts and Reviews

Edited by

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All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

A Textbook of Orthodontia: By Robert H. W. Strang, M.D., D.D.S., Director of courses in orthodontia in the extension teaching department of Temple University; former Director of courses in orthodontia in the extension teaching departments of Columbia University and the University of Toronto; Director of the Fones School of Dental Hygiene, University of Bridgeport; Co-editor of The Angle Orthodontist; Consulting Oral Surgeon to the Bridgeport Hospital, Bridgeport, Conn. Revised third edition, with 1,050 illustrations on 583 figures and 5 plates, some in color. Philadelphia, Lea & Febiger, 1950.

The third edition of Strang's *Textbook of Orthodontia* follows seven years after the publication of the second edition. It presents many changes in technical procedures. These modifications are dictated by newer concepts on the growth of bone and the role of heredity as the determining factor to the growth of the maxilla and the mandible.

Strang's description of normal occlusion and his chapter on "The Natural Mechanics of the Human Denture" are recommended for diligent study. Much valuable material on endocrine glands has been added to the chapters on etiology and the chapter on "The Growth and Development of the Denture" is one of the best

Under Case Analysis for Classification, Strang has included the oriented profile roentgenogram, and this chapter should be carefully studied by all orthodontists regardless of what type of orthodontic appliance they use.

The greater portion of the text is given over to the treatment of malocclusion, and the appliance therapy is restricted to the edgewise arch mechanism, which was the last of Edward H. Angle's contributions to orthodontics.

Clinical experience taught the author that muscle balance is the greatest stabilizer of any corrected malocclusion, and he feels that the width across the mandibular canines found in the malocclusion should not be increased during treatment.

In addition to his own plans of treatment, Strang has outlined those of Dr. Charles H. Tweed in detail, and also a plan of treatment for bimaxillary protrusion cases advocated by Dr. Harry Bull. The treatment of patients requiring extraction of teeth is covered in minute detail, and the indications and contraindications for extractions are thoroughly discussed.

As in the two previous editions of the *Textbook of Orthodontia*, the author has set down in detail each and every step required in the intelligent use of the edgewise arch appliances. Dr. Strang has the ability to write in clear, understandable fashion, and the third edition of his book is a valuable contribution to orthodontics and possesses much valuable material for all those interested in orthodontics.

W. M. Thompson, Jr.

Orthodontics (Diagnosis, Prognosis and Treatment): By Bercu Fischer, D.D.S. With 1,180 illustrations on 212 figures. Philadelphia and London, W. B. Saunders Company, 1952.

Orthodontics (Diagnosis, Prognosis and Treatment) by Fischer must be placed on the compulsory reading list of all practicing orthodontists. It is a well-written, serious work, which deals specifically with the treatment of Class II, Division 1 cases. Because of this limitation it cannot be considered to be a textbook on orthodontic practice in general. It is important because it introduces new ideas together with a new method of approach to treatment of one

type of malocclusion.

After discussing the "Hazards of Treatment," such as "Root Resorption" and the "Instability of the Treated Denture," Fischer annunciates the "Individuality Hypothesis" which in substance states that every orthodontic case "presents individual characteristics which set it apart from any other case." There is a great variation in these characteristic traits and the "manifold combinations of these traits result in the almost infinite diversity of human individuality." The discussion of the "Individuality Hypothesis" includes: Variation in dental traits such as molar relationship, overbite, overjet. and axial inclination of mandibular incisors; variation of dentalfacial traits such as protrusion of maxillary dental arch, retrusion of mandibular dental arch, and mandibular retrusion and bimaxillary protrusion; variation of facial traits is discussed as are variation of response, compensation adjustment, and tissue tolerance.

Fischer states that orthodontic results are unpredictable because tooth roots may be resorbed: the objects of treatment may not be attained and the treated denture may be unstable. It is recommended that, in order to avoid root resorptions, the treatment of a patient be undertaken at the earliest possible age, and carried out in the shortest possible time. The attainment of the "achievable optimum" takes into consideration the assumed condition that the objectives of treatment differ from the standard used during treatment, and, finally, in order to assure a greater stability of the treated denture, sectional treatment may be instituted, for it is reasoned that teeth that are not subjected to orthodontic forces are more stable in their position. If the entire treatment is carried out with a minimum disturbance of the teeth, the treated denture will be more stable.

The personal experiences of this reviewer do not confirm these recommendations. The occurrence of root resorption is much too high as given in Fischer's book. Early treatment often results in prolonged treatment or retreatment. The recognition of the limitation of our abilities by the designation "achievable optimum," is unwise, for it may be used by some as a subterfuge in explaining oherwise unacceptable orthodontic results. The treatment of Class II, Division 1 cases by "sectional tooth movement" does not eliminate the movement of those teeth which are in malrelation within the arches. The sectional distal movement of the maxillary posterior teeth must be followed by the lingual movement of the maxillary anterior teeth; in the end every maxillary tooth is moved. Almost without exception, the mandibular teeth require no movement through the bone, and the adjustment in the mandible is merely a change in position in relation to the maxilla. It is conceivable that by means of sectional treatment the maxillary teeth may be moved far enough distally to establish a normal relationship of the arches. It still remains to be demonstrated that the maxillary posterior teeth remain in their distal position permanently.

It is interesting to note that Fischer states, "It is never the whole dentofacial complex that is used as a Standard nor is it the whole complex that is being evaluated. Only isolated relationships are used both in the Standard and in case under analysis. Both the Standard and the individual physiologic aspects of these anatomic parts are completely ignored. They are evaluated as Static relationships. The relationships demanding correction are not necessarily complimentary. The correction of one trait very often conflicts with that of another or disturbs a relationship not requiring correction." From this it is clear that during the analysis of a case the various diagnostic and prognostic criteria are not correlated, although according to the foregoing quotation, such

correlation is implied.

The book deals largely with the basic plan of treatment in which occipital force is used for the distal movement of the maxillary posterior teeth and the retraction of the maxillary and mandibular incisors. The method of procedure is clearly described and those who may be interested in the technical procedures should find it rewarding and interesting to read the book. The specific cases shown testify to the correctness of the technical procedures to accomplish the tooth movements dictated by the analysis. The methods of recording have already been published and they must be carefully studied before they can be universally accepted. It is certain, however, that a phrase such as the "achievable optimum" will lead to misunderstanding, which may result in the lowering of standards in the completion of orthodontically treated cases. Dr. Fischer must be complimented and congratulated for clear and concise presentation of his work.

Alexander Sved.

Speech Therapy in Relation to Malocclusion: By Elinor Wray. D. J. Australia 24: 103-110, June, 1952.

The most common group of speech disorders which may be influenced or caused by malocclusion and abnormalities of the jaw are the dyslalias. This is a type of speech which covers all disorders of articulation. If sounds are produced incorrectly, omitted or replaced by others, speech is diagnosed as dyslalic. Other symptoms are babyish sentence construction and use of language reading disability, a vocal defect such as rhinophonia and dysphonia, and immature type of personality. All or some of these symptoms may be present in a patient suffering from dyslalia, in varying degree of severity. These children are sometimes very bright, and records of intelligence quotients show a range from 138 to 40 and below.

These are types of dyslalia and are very common in malocclusion and psychogenic conditions. Abnormal sounds included in this group are the sibilants, S, Z, SH, ZH, SP, ST, SC, SL, and so on, and their most common distortions can be classified according to the following signatisms: (a) lateral, (b) interdental, (c) strident, (d) palatal, (e) addental, (f) nasal and (g) laryn-

geal and pharyngeal.

The phonetic placement for S and Z is determined by this ruling:

The tip of the tongue must be pressed lightly against the lower incisor, or lie closely to the upper incisors. The breath stream must be concentrated into a narrow groove, formed along the midline of the front of the tongue, and must rub against the biting edges of the incisors, as it leaves the center of the mouth, in a thin stream with just enough pressure. The lips are spread slightly. The sides of the tongue should seal the breath from escaping laterally, and are against the dental arch. SH and DZ are produced the same way except that the lips protrude and the breath is directed forward:

1. Lateral Sigmatism.—A hissing and L sound simultaneously is heard. The necessary elevation of both the lateral edges of the tongue is missing. The expired air escapes on both sides of the mouth through the dental arches. Excessive saliva may show outside the mouth.

2. Interdental sigmatism or multiple interdentalism is a condition in which not only the hissing sounds are affected but speech is generally produced with the tongue tip protruding through the front teeth.

3. Strident signatism is a very sharp, piercing, whispering sibilant, caused by too deep or too wide a groove along the midline of the tongue. An artificial

denture, malocclusion, or prognathic mandible can produce this.

4. Palatal sigmatism is produced when the sibilant is made with the tip and blade of the tongue against the palate and the result is a "darkness," or

blanketing of the sound acoustically.

5. Addental sigmatism is produced when the tongue is pressed too hard against the teeth, so that no central groove is formed; the acoustic effect is like T. Froeschel shows how the abnormal reproduction of S may be due to a bilateral lesion in the inner ear, acquired in early childhood; so that the defect may be a symptom of a lesion of the inner ear.

6. Nasal sigmatism is heard when the palatopharyngeal sphincter does not close the nasal port, and sometimes a snort or strong nasal breath escape can

be heard. Excessive nasality may also be noticed in general speech.

7. Laryngeal sigmatism is a sound which is produced by friction of air in between the ventricular bands and replaces S while the tongue is inactive. This is rare and appears in cleft palate when the soft palate is short and tight and the patient tends to speak back in his throat.

SOME MALOCCLUSIONS AND ORAL DEFORMITIES WHICH CAUSE DYSLALIA AND DEFECTS OF VOCAL TONE

a. Cleft palate and cleft lip.

b. Open-bite.

c. Recessive mandible.

d. Prognathic mandible.

e. General dental irregularities.

a. Cleft palate causes more alterations in speech than any other oral deformity. The author has observed cases in which every consonant except M, N, and NG, was omitted or substituted and with many vowel distortions and nasalized vocal tone.

In many cases of pre- and postalveolar cleft a vocal or tone defect is present, whether there is an articulation defect or not. The extent of the anatomical deformity determines the characteristic of the vocal tone as well as articulatory

errors

If the velum is tight, scarred short or cleft, if the hard palate is too high or too flat, if there is malocelusion, and obstruction or irregularity in the nasal cavity, or the upper lip tight and scarred, a severe dyslalia can be expected, as well as an excessive hyper- and/or hyporhinophonic element in the vocal tone.

One or more of these anatomical abnormalities may be present in a case of surgical repair of a cleft palate, particularly in patients of 10 years or over, probably because surgery had not reached the present standard of efficiency.

How speech is affected: In a bi- or unilateral prealveolar cleft, P, B, M, W, and U may be omitted if the lips are not approximating. When the upper teeth are malocaluded or misplaced, Th, F, V, S, Z, and SH may be defective.

Pre- or postalveolar clefts can affect all consonants, except M, N, and NG, and vowel distortions may be present. These two conditions are so interrelated that it is difficult to make a distinction between speech defects arising from each type.

Unintelligible speech is heard from patients with a cleft soft palate only, but in this type it is more common for S, Z, and SH to be affected, as well

as an excessively nasalized tone to be produced.

b. Open-bite.—The effect upon speech depends upon the size of the hiatus and upon the degree of prognathism of the mandible or maxilla. If the condition is such that the lower lip cannot readily be placed in contact with the upper teeth, F and V will be defective. S, Z, and SH are usually defective because of the difficulty in sending a narrow air blade against the cutting edge of the lower incisors.

SH, DZ, and TH are sometimes imperfectly formed, and if the lips cannot be brought together, P, B, and M will be defective. The linguals L, D, and T may be produced interdentally instead of the tongue tip being held behind the upper front teeth. In some cases speech may be generally interdental.

- c. Recessive Mandible.—This deformity presents several problems:
- 1. In producing the sounds P, B, and M the upper lip meets the lower one with difficulty.

2. The tongue sits so far forward on the floor of the mouth that it blankets

the lower incisors, making the S sound like E and Z like O.

3. Even when the tongue is drawn back (or the mandible thrust forward) to expose the lower incisors to the air blade sent against them by the tongue, they are still too far back to cut the air stream at the right angle to make a good sibilant sound.

d. Prognathic Mandible.—The chief problems here are the adjustments

for S, Z, SH, CH, F, V, and TH.

S and Z are almost impossible, because there is no way to drive a narrow blade of air against a sharp edge of a lower incisor, an essential for a good sibilant; SH, CH, and TH, because they require an interdental bracing of the tip of the tongue, which is difficult here. F and V are also likely to be defective because the lower lip does not readily meet the upper teeth.

Orthodontics should be considered before speech therapy is attempted, although some therapists like to commence training when the patient is very young, to prevent undesirable habits forming, even if orthodontics is not pos-

sible until the child is of suitable age.

The author personally agrees with early habit training to prevent incorrect movements and breath direction spreading to a more generalized use of speech, and it is found that the patient uses a compensatory mechanism to achieve improvement until orthodontic treatment can be given; during that stage when appliances are in the mouth and the oral cavity is changing it is better to defer speech therapy until the conclusion.

e. General Dental Irregularities.—Other irregularities of the teeth such as congenitally absent or supernumerary teeth, particularly the upper lateral incisors, misplaced or imperfectly developed teeth, can be the cause of inability to make the necessary articulatory adjustments in some patients, while others who have the same dental defects have been able to achieve standard speech.

It is possible that the oral deformity, visible to the eye, may act as a psychogenic factor in affecting speech, in the same way as other physical anomalies may develop social inadequacy, appearing as a stutter or some other vocal defect such as rhinophonia or dysphonia, the symptoms of the last two being abnormal nasal resonance and huskiness of tone. A child with an oral deformity may develop infantilisms in his speech, as the result not only of the deformity but also the inhibitions and allowances made for him by his parents, teachers, and friends for his disability, or from ridicule and derision from his playmates, or, on the other hand, he may perpetuate his infantilisms, which commenced with sheer inability to coordinate his oral muscles correctly in early childhood and which in all probability he could have corrected as he grew older.

The tongue is the most important organ in the mouth for compensation for oral deficiencies and is capable of almost limitless adaptability to take up the function of the other crippled parts of the mouth.

There are certain minimum requirements for all sounds of speech, and when these are supplied the law of compensation seems to apply to speech defects and explains how a socially acceptable type of speech can be developed. For example, the sound of D: the phonetic requirement is for the tongue point to articulate with full muscular pressure upon the apex of the back of the upper central incisors, but a perfectly good D sound can be made with the tongue tip anywhere between the edge of the upper alveolus and halfway back on the hard palate. And again a good D can be formed by the blade of the tongue against the hard palate, or the tip against the lingual surface of the lower central incisors.

There is the case of the boy with a labial deformity, who compensated for a defective F and V by placing the upper lip against the lower teeth. The sound produced was standard but the effect was strange. Many more instances could be cited.

One of the most common compensatory mechanisms is the one which has been developed for the speech re-education of laryngectomized patients. There are several methods in use and here is a description of the pharyngeal method:

The patient is asked to get a column of air in motion and pass it backward and forward, between the mouth and pharynx. This is done by following the movements of swallowing.

The back of the tongue is kept raised, thereby trapping a bubble of air in the pharynx, which is to be the power of the sound to be made by the approximation of the muscular tissues in the vicinity, which become the substitute vocal chords.

Once vibrations are started, voice and articulation can be obtained with practice and patience. Many patients achieve a standard of speech acceptable to society. The voice is low-pitched and soft and rather unpleasant, but adequate to fulfill the normal social communication of life.

Tongue-Tie.—The condition of tongue-tie is another commonly misunderstood abnormality found in actual fact, although many cases of indistinct and dyslalic speech are attributed to this cause.

That the child has survived infancy and the sucking period of life indicates that the tongue was free enough to reach to the alveolar ridge. If the tongue can be protruded as far as the lips, all articulatory movements should be able to be taught, with compensatory movements. If a genuine tongue-tie does exist the lingual frenum should be clipped and a brief period of remedial speech should follow.

a. Examination includes testing for breath direction, by spirometers and the oral muscle trainer, by ear, and by examination of the mouth.

b. A speech test is then performed. The patient is shown a series of pictures which he is asked to name. Each consonant is represented in these initially, medially, and finally.

A vowel test, by picture representation, is also given. A record of the response is taken down in international phonetics and an assessment made on completion. The aim of the test is to assess the number of incorrect sounds and thus to determine treatment. A retest is administered every three months until the score shows a minus. By this means an accurate record of progress can be kept.

Psychometric testing is done at one of the child guidance clinics, so that maladjustment can be dealt with, without which speech therapy could not be successful.

c. An intensive case history of the child's life is taken from prenatal stage up to the present.

Principles of Treatment.—Treatment for speech abnormalities arising from: a. eleft palate, b. open-bite, c. recessive mandible, and d. prognathic mandible, in which sigmatism is a common feature, follows these lines in a general way. Space does not allow and the subject is too vast to do more than broadly outline general principles of treatment.

- a. Cleft palate: Aims of treatment are:
- 1. To train the direction of the breath outward, through the mouth instead of the nose, by training in breathing exercises and blowing.

2. Exercises to increase the mobility of the tongue, lips, and palate.

- 3. Exercises for training discrimination between articulatory errors and the correct sounds, and to learn to make those that are correct.
- b. Open-bite: Treatment consists of breathing exercises, ear training, oral muscular exercises, articulation drills, and relaxation therapy. Speech from this condition will probably be interdental, T, D, L, N, and sibilant sounds being affected, and even though they are acoustically correct they are socially undesirable.

Use of a mirror and training in slow speech are important.

c. Recessive mandible: There are individual differences in speech mannerisms and sound distortions in each of these conditions, the sigmatisms usually being dominant, and treatment is generally on similar lines but varies in detail.

Myo-Functional Therapy: By R. Grude, Oslo Supplement to Den Norske Tan. Tid., January, 1952.

When considering Prof. Viggo Andresen's activator method of myofunctional therapy, facts that have emerged from twenty years of clinical experience help to complete the picture and shed more light on his principle of myofunctional therapy.

Professor Andresen expected much of the activator method, which he thought would enable general dental practitioners to extend their orthodontic treatment. This, however, has not been the author's experience. Although useful, this appliance is not an orthodontic cure-all, and wide diagnostic experience is first necessary before one can decide that this system can be used in

a particular patient.

This myofunctional appliance, the activator, is designed to lie quite loosely in the mouth so that, when it drops away from the upper teeth, it has to be replaced by muscles closing the jaws and by the tongue and the lips. Thus, it is important when registering the wax bit for this appliance (or when trimming the finished vulcanite or acrylic) that the teeth should be closed slightly more than they would be in rest position, so that the vertical (freeway space) is reduced when the patient bites on the appliance. In this way, the activator provides repeated stimuli to the whole musculature of the mouth and face and it is used to change the behavior of these muscles in deglutition.

The primary aim of the activator method is to change the behavior of the musculature of the face, which, in turn, may alter the form and structure of the bones of the face. At the same time, stimuli are transferred by this inert apparatus through the teeth on to the supporting tissues. The position of the teeth will thus always be in harmony with the soft tissues acting upon them.

When using fixed appliances, on the other hand, one tends to think primarily of moving teeth into perfect alignment to make arches of good outline form, in the hope that stabilization will be obtained automatically. The experi-

ence of relapsed cases has taught the necessity for preserving the balance of forces that has been established in these more or less abnormal musculature tissues that surround the malformed dentures.

As regards the general treatment of mesioclusion, the author's experience has been that the activator method can be used especially when the mesioclusion results from extrinsic factors. When the malocclusion results from inherited overdeveloped mandible, then he prefers to use fixed appliances first in conjunction with surgial procedures and only use the activator later to prevent any tendency toward a relapse which might be caused by the stretched muscles.

### News and Notes

#### Northeastern Society of Orthodontists

The Fall Meeting of the Northeastern Society of Orthodontists will be held in Boston, Mass., Nov. 9 and 10, 1953; the Annual Meeting will be held in New York, N. Y., March 8 and 9, 1954.

The following are the newly elected officers of the Society:

President, J. A. Salzmann \_ \_ \_ \_ 654 Madison Ave., New York, N. Y.

President-Elect, Philip E. Adams \_ \_ \_ \_ 106 Marlborough St., Boston, Mass.

Vice-President, Harold M. Clapp \_ \_ \_ \_ 1600 Genesee St., Utica, N. Y.

Secretary-Treasurer, Oscar Jacobson \_ \_ \_ \_ 35 W. 81st St., New York, N. Y.

#### Pacific Coast Society of Orthodontists

The Twenty-third General Meeting of the Pacific Coast Society of Orthodontists was held Monday, Tuesday, and Wednesday, Feb. 23, 24, and 25, 1953, at the Palace Hotel, San Francisco, Calif. There were 253 present.

#### University of Buffalo, School of Dentistry

The University of Buffalo announces that its Department of Orthodontics will be located in the new Medical-Dental School on the Campus for the beginning of the fall semester, 1953.

Applications for the postgraduate course in orthodontics are now being received. This course leads to a Certificate of Proficiency in Orthodontics.

Additional information may be obtained by writing to: University of Buffalo, School of Dentistry, Department of Orthodontics, 3435 Main St., Buffalo 14, N. Y.

#### Northwestern University

The Graduate Department of Orthodontics of Northwestern University Dental School announces that on June 15, 16, and 17, 1953, it will present a postgraduate course on the Practical Application of Cephalometric Radiography to Orthodontics and Functional Analysis of Occlusion.

The course will cover the technique of cephalometric radiography, interpretation of cephalometric radiographs, evaluation of orthodontic therapy, the influence of facial growth on orthodontic therapy, normal and abnormal function of the temporomandibular joints, and functional analysis of the occlusion and articulation of the teeth.

For further information and application forms write to: The Dean, Northwestern University Dental School, 311 East Chicago Ave., Chicago 11, Ill.

#### University of North Carolina

A fifteen months' graduate course in orthodontics, leading to a Master of Science degree, will begin in June, 1953, under the direction of Dr. L. B. Higley.

A four-day concentrated course in pedodontics, including clinical work with patients, under the direction of Drs. W. W. Demeritt and John C. Brauer, will be offered from June 15 to 18, 1953.

Application for graduate or refresher courses may be made by writing the Dean, School of Dentistry, University of North Carolina, Chapel Hill, N. C.

#### Tufts College Dental School

Tufts College Dental School, Division of Graduate and Postgraduate Studies, announces three courses in occlusorehabilitation by Dr. Louis Alexander Cohn.

For further information and application, write to: Director of Graduate and Postgraduate Studies, Tufts College Dental School, 136 Harrison Ave., Boston 11, Mass.

#### Spanish American Congress of Odontology

The First Spanish American Congress of Odontology will take place at Seville from May 1 to 7, 1953. The Ortodoncy Section would be honored with the assistance and cooperation in Spain of its European and American colleagues, who, besides the cultural and scientific interchange of their techniques, so indispensable to the progress of ortodoncy, will be able to enjoy the wonderful scenery offered by Andalucia in spring and mainly by its capital, Seville, the most typical of Spanish cities.

#### Johnson Alumni Club

The name of Theodore N. Engdahl, D.D.S., 601 Medico-Dental Bldg., San Jose, Calif., should have been included with the names of members of the board which appeared on page 239 of the March issue of the JOURNAL.

#### American Dental Association

There are 91,638 United States dentists, one for every 1,691 persons, it was reported recently in *The Journal of the American Dental Association*. The report was based on the newly issued 1953 edition of the American Dental Directory, published by the Association.

The newest tabulation of dental practitioners lists 84,215 civilian dentists and an additional 7,423 serving in the Armed Forces and the Veterans Administration.

Nearly three times as many dentists are now on duty with the armed services and the Veterans Administration as were listed in the last Directory, published in the fall of 1950. At that time, 2,575 dentists were reported as serving in the military forces and the Veterans Administration.

The latest count of members of the dental profession shows 4,762 more dentists than were listed in the 1950 Directory. At that time, the Directory count indicated that there was one dentist for each 1,733 residents in the United States.

The sharply increased military demands on the nation's practicing dentists is reflected in the distribution of dentists for the civilian population throughout the United States.

While the total number of dentists has increased substantially, the proportion of dentists to population has decreased slightly in every region except the Southwest.

The Southwest area, including Arizona, New Mexico, Oklahoma, and Texas, has one dentist for each 3,116 residents as compared with one dentist for each 3,145 residents in 1950.

The East Coast and the West Coast continue to be served by more dentists in proportion to population than any other part of the country.

On the East Coast, the geographical area that includes Delaware, the District of Columbia, Maryland, New Jersey, New York, Pennsylvania, and West Virginia leads the nation with one dentist for each 1,425 persons.

The Far West, including California, Nevada, Oregon, and Washington, has the second most favorable ratio of dentists to population with one dentist for each 1,514 persons.

The New England region is third with a ratio of one dentist for each 1,540 residents; the Central States are fourth with a ratio of one dentist for each 1,659 persons, and the Northwest is fifth with one dentist for each 1,864 residents.

Fewer dentists in proportion to population than any other section of the country are found in the Southeast with a dentist-population ratio of one to 3,468.

Among states, New York leads with one dentist for each 1,135 persons. However, the District of Columbia has overtaken New York with a ratio of one dentist for each 1,098 persons. Second among states is Minnesota with one dentist for each 1,344 persons and third is Connecticut with a dentist-population ratio of one to 1,391.

Least favorable ratios were reported for South Carolina with one dentist for each 5,477 residents and for Mississippi with one dentist for each 4,557 persons.

#### Announcement to Future Essayists

At the annual session of the American Association of Orthodontists in Louisville the following recommendations of the Publication and Editorial Board were adopted and are now official:

- 1. That many valuable articles are lost for publication because they were not prepared for such.
- 2. Authors expecting to have published, without expense, a profusion of illustrations impose a difficult task upon the editorial staff.
- That the A.A.O. should adopt official instructions for essayists, including all constituent societies, as to the manner in which their manuscripts should be prepared for publication first and for presentation second.

The contract between the American Association of Orthodontists and The C. V. Mosby Company includes a stipulated sum to be spent for the illustrations of acceptable articles for publication. Any excesses of this budget must be paid out of the treasury of the A.A.O. and may become dangerously expensive.

Accordingly the A.A.O. passed a resolution in 1949 limiting the cost of illustrating any one article appearing in the JOURNAL. In the exercise of these instructions, the Editorial Staff of the JOURNAL has been most lenient and considerate, but the budget must be held within its limit. Excess costs of illustrations may be paid by the authors or other outside sources, if desired.

Avoid delay in the publication of your essay by limiting illustrations.

GEORGE R. MOORE, Secretary-Treasurer, A.A.O. S. J. Kloehn, Chairman, Publication and Editorial Board, A.A.O.

#### Notes of Interest

Dr. Samuel Fastlicht moved from Madero 40 to his new office, Londres 85-401, Mexico City, Mexico.

Dr. Guy M. Gillespie, 404 Alexander Bldg., Abilene, Texas, announces the association of Dr. A. Fourment, D.D.S., practice limited to orthodontics.

M. Albert Munblatt, D.D.S., announces the opening of his office at Cedarhurst Medical Center, 650 Central Ave., Cedarhurst, N. Y., practice limited to orthodontics.

Dr. John E. Sage wishes to announce the opening of an additional office at Hadley Arms, 275 Middle Neck Road, Great Neck, Long Island, N. Y., practice limited to orthodontics.

Nathan M. Seltzer, D.M.D., M.S., announces the opening of his offices at 6333 Wilshire Blvd., Los Angeles 48, Calif., practice limited to orthodontics.

Dr. L. E. Habegger, 635 Fourteenth St., Santa Monica, Calif., died in May, 1952. Dr. E. R. Schroeder, 20037 Redwood Road, Castro Valley, Calif., died Feb. 20, 1953.

#### OFFICERS OF ORTHODONTIC SOCIETIES

The American Journal of Orthodontics is the official publication of the American Association of Orthodontists and the following component societies. The editorial board of the American Journal of Orthodontics is composed of a representative of each one of the component societies of the American Association of Orthodontists.

#### American Association of Orthodontists

President, Brooks Bell	4150 Mockingbird Lane, Dallas, Texas
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#### Central Section of the American Association of Orthodontists

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Secretary-Treasurer, Frederick B.	Leh	man	-	60	40		-	-		1126 Merchants Bank Bldg.,
										Cedar Rapids Towa

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#### Middle Atlantic Society of Orthodontists

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Secretary-Treasure	, Gerard	A.	De	evlii	1 -	-	-	_	-	-	-	_	49 Ble	eker	St., Newark, N	v. J.

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#### Pacific Coast Society of Orthodontists

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Secretary-Treasurer, Raymond M. Curtner -	 and the same of th	- 450 Sutter St., San Francisco, Calif.

#### Rocky Mountain Society of Orthodontists

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Secretary-Treasurer, Curtis L. Benight	-	_	-	-		1001 Republic Bldg., Denver, Co	olo.

#### Southern Society of Orthodontists

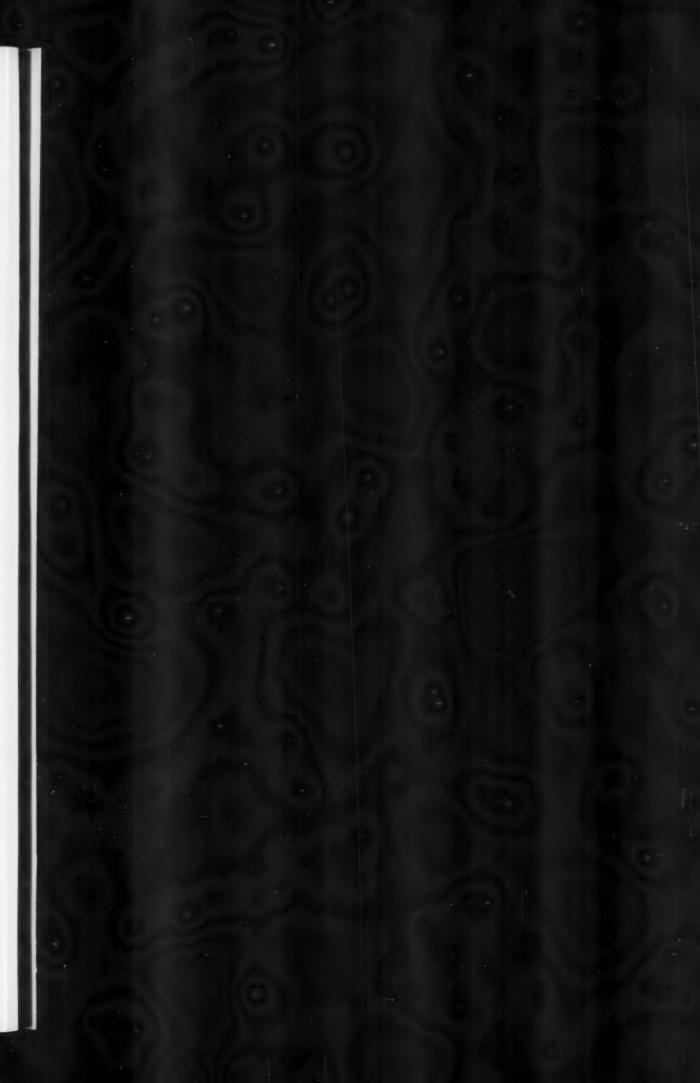
President, Leland T. Daniel	600	-	-	cao	000	_	407-8 American Bldg., Orlando, Fla.
Secretary-Treasurer, M. D. Edwards	_	-	-		-	60	132 Adams Ave., Montgomery, Ala.

#### Southwestern Society of Orthodontists

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Secretary-Treasurer,	Fred A	. Boy	1 -	-	-	-	_	-	1502 North Third St., Abilene, Texas

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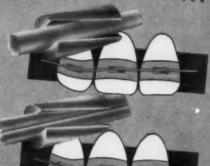
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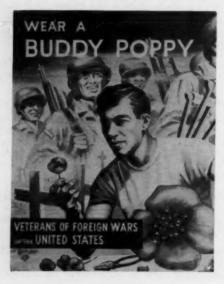
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